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AUTHOR Athey, Irene
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ABSTRACT

Part of a collection of papers commissioned by Foundations, a development project that examined the career development needs of students entering the National Technical Institute for the Deaf, the paper reviews a range of developmental theories and models that pertain to adolescents and young adults. An attempt is made to create a composite picture of the "typical" person of that age, and the models are scrutinized for indications or predictions about the behavior of individuals who, because of some handicapping condition and/or environmental deprivation, fail to reach or deviate from the expected "norm." The following seven types of theories and models are addressed (wherever possible, for each type, specific examples of maturational-biological, environmental, and interactionist approaches are cited): philosophical, cognitive-learning, language, personality, morality, education, and vocational. Implications of the various models for the deaf adolescent are then examined in terms of such topics as early experiences of trust and autonomy, questions of identity, issues of industry vs. inferiority, and cognitive and linguistic potential. (CL)

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Theories and Models of Human Development: Their Implications for the Education of the Deaf

Irene Athey

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Theories and Models of Human Development: Their Implications for the Education of the Deaf

Irene Athey
Rutgers University

The major purpose of the present review is to abstract from a broad range of developmental theories and models those aspects that pertain to the adolescent and young adult and to integrate these aspects in such a way as to present a composite picture of the "typical" or "normal" person of this age. The models will be scrutinized for indications or predictions as to ways in which persons who, by reason of some handicapping condition or environmental deprivation or some combination of the two, either fail to reach or deviate from the expected norm.

The review will be in four sections:

I. Theories and Models

A. Philosophical

1. Maturational-biological
2. Environmental:
3. Interactionist

B. Cognitive-Learning

1. Maturational-biological: Jensen, Gesell
2. Environmental: Pavlov, Watson, Skinner
3. Interactionist: Piaget

C. Language

1. Maturational-biological: Chomsky, Lenneberg
2. Environmental: Skinner, Staats, Luria
3. Interactionist: Bloom, Cazden

D. Personality

1. Maturational-biological: Freud
2. Environmental: Mead, Benedict, Bandura-Walters
3. Interactionist: Erikson, Havighurst

E. Morality

1. Maturational-biological:
2. Environmental:
3. Interactionist: Kohlberg, Maslow

F. Education

1. Maturational-biological: Montessori
2. Environmental: Gagne
3. Interactionist: Cronbach-Snow

G. Vocational

1. Maturational-biological:
2. Environmental: Roe, Super
3. Interactionist:

II. Composite Picture of a "Normal" and a Deaf Adolescent

1. Perception of self
2. Perception of the world
3. Achievement motivation
4. Career orientation
5. Expected behavior

III. Sex, Ethnic, and Socioeconomic Differences

IV. Implications for Instruction and Guidance of Deaf Students

Section 1

Theories and Models

Section 1 will be organized into units corresponding to ways in which the psychology of the human organism has traditionally been divided for study: Cognitive/Learning, Language, Personality, Morality, and Vocational theories. Additionally, theories of Education that have relevance for the study of adolescence will be considered. Within each unit are found models that exemplify the biogenetic or maturational, the environmental or sociocultural, and interactionist, or those that posit some form of interaction between the developing organism and the environment. Table 1 summarizes this organization.

In discussing each model, we will begin with a brief general outline of the theory or model, then proceed to elaborate on those aspects of the theory that pertain to adolescence.

THEORIES and MODELS of HUMAN DEVELOPMENT

	Maturational-biological	Environmental	Interact
A. Philosophy			Lecky
B. Cognitive-Learning	Gesell Jensen	Pavlov Watson Skinner	Piaget
C. Language	Chomsky Lenneberg	Skinner Staats Luria	Bloom Cazden
D. Personality	Freud Hall	Mead Benedict Bandura-Walters	Erikson Havighurst
E. Morality			Kohlber Maslow
F. Education	Montessori	Gagne	Cronbach-Snow
G. Vocational		Roe Super	

Lecky's Self-Consistency Theory

Lecky's (1951) theory is based on the premise that human behavior is usually "in character" because all the acts of an individual have the goal of maintaining the same structure of values (pp.81-82).

Lecky was reacting to the pervasive behaviorism of his day, which tended to study isolated pieces of behavior without reference to a theoretical underpinning that might provide a broader framework. Prediction of future behavior from this standpoint would rest solely on the frequency with which similar behavior had occurred and been reinforced in the past. Lecky rejected this notion categorically. A few quotations from his single work, Self-Consistency (1951) give the flavor of his position.

> While the study of character would of course be worthless unless it were based on carefully established facts, it is also apparent that the facts alone do not furnish their own illumination. The central scientific problem, therefore, is manifestly interpretation. . . . Mechanistic theory is itself an interpretation (p.99).
>
> The current definition of psychology as "the study of behavior" is as meaningless as a science of physics described as "the study of motion." What is meant, of course, is the behavior of organisms, but if the organism is the unit, and we study it descriptively, we thereby suppress the integral character of the behavior itself (pp.100-101).

For Lecky, then, the structure of the personality is a constellation of values, some of which are close to the core of the self, while others are more peripheral and more amenable to change. The total constellation changes over time -- more slowly and with more resistance at the center, more readily at the periphery. By selective perception and memory of those events that fit the value system, and by distortion or abandonment of those that do not, the personality is molded into a coherent unity of ideas, attitudes, values, and beliefs. Self-consistency is thus the overriding principle of personality formation.

Change is possible, however, through learning. Learning is problem solving, and the problem basically is the problem of assimilation. To use Lecky's own example, to the infant, food is a problem; it must begin with those foods that are easy to assimilate, and progress to more varied diet by easy stages.

"In a word, the organism must learn to solve increasingly difficult problems of assimilation, and develops because it does solve them" (p.114). If learning is problem-solving, then the solutions achieved constitute the organism's preparation for the next task. The broader the preparation, the wider the variety of foods that can be used to maintain the organism in its normal state, and the greater its freedom of choice and action, since it is no longer dependent on certain kinds of food. But other learnings are also involved. The organism must also learn to defend itself against germs and bacteria, to adjust to changes in temperature, and in general, to live in the environment in which it finds itself. "Stability is a function of preparation" (p.114).

There is, of course, a strong parallel between Lecky's formulation and that of Piaget, who drew heavily on biology in developing his theory. The parallel becomes even more evident as Lecky elaborates on the learning process.

> Independence and freedom, insofar as they exist, are thus the organism's own achievement. Assistance can be given by protecting the child against problems too difficult for him, and by presenting new

> problems at the proper time, but the learning itself must be accomplished by the child. He must develop his own repertory of solutions. Since his preparation at any given time is limited, however, and his history marked by failures as well as by successes, the scope of his freedom is likely to be rather sharply defined. That is, he tends to select and avoid situations according to his estimate of his own abilities. On the basis of past experience, he predicts in advance whether new situations will be soluble or insoluble, and consequently, whether his organization will be strengthened or disturbed if he faces the problem.

As with Piaget, although the discussion started at the biological level with the assimilation of food, it moves quite naturally into the psychological field, since the mechanisms of assimilation (and in Piaget's case, accommodation) are the same. Together they constitute the individual's adaptation (Piaget's term) to his environment. Piaget would agree with Lecky that "learning begins with a problem which produces or threatens to produce an emergency state, and proceeds in the direction of a state of stability " (p.115), but the terminology would be slightly different. Piaget would say that some event (external or internal) disturbs the equilibrium of the organism, which "assimilates" those aspects of the event that fit the organism's schemata at the moment, as a result of which, accommodation (internal or behavioral) occurs, raising the organism to a new state of equilibrium. Thus, learning has taken place.

We also see how much both authors owe to the Gestalt psychologists' concept of "reorganization of the perceptual field."

Another interesting point made by Lecky is that learning also involves more economical use of the organism's resources. A performance that is being learned involves the activity of the whole organism (cf. the global undifferentiated body activity of the infant). After learning takes place, the activity becomes more differentiated and localized. In other words, efficiency as well as level of performance is an important ingredient of learning. Conversely, if mastery of the skill or task is accomplished, but the excessive activity continues, or an inordinate amount of time is consumed in the performance, according to Lecky, this signifies a failure in the learning. Of course, there are situations where even after learning has taken place, the organism for some reason resorts to "emergency behavior." "Logically, therefore, the evidence would indicate that the process is not mechanical " (as stimulus-response theory would hold), "but economic, a question of organic efficiency, cooperation, and division of labor. Problems must be solved to prevent the too-frequent appearance of emergency behavior, which would interfere with organic efficiency" (p.116).

Like other phenomenological theories, Lecky's is essentially humanistic, subjective, and individualistic. The organism is conceptualized not as a physical system whose behavior obeys the laws of mechanics, but as an organization with the psychological attributes of thinking, choosing, remembering, learning. Hence his explanation of certain psychological phenomena is different from the behavioristic interpretation. It may be remembered that, in a famous experiment, Pavlov subjected his dogs to a learning situation in which the animal was conditioned to respond to a circle but not to an oval. When the stimulus became ambiguous (the oval gradually became more circular), the animal's behavior changed abruptly. It began to jerk violently, squealing and biting the apparatus, even after it was removed to another room. This condition of acute neurosis often lasted several months.* Pavlov's explanation,

* Later experiments by Gantt, using sheep, showed that the same behavior can be evoked years later in some subjects simply by returning them to the experimental room.

of course, rests on the hypothesis that the conflicting processes of excitation and inhibition are induced simultaneously in the brain. Lecky points out the "curious fact" that the severity of the symptoms in such cases seems to be determined by the lack of expectation rather than by the shock itself. "The ability to foresee and predict environmental happenings, to understand the world one lives in and thus, to be able to anticipate events and prevent the necessity for sudden readjustments, is an absolute prerequisite for the maintenance of unity.... The apparent stability of the habit system is not to be interpreted as due to the fixation of pathways in the nervous system, but rather as the reflection of a stable system of values. It follows that to change the habits we must work on the values, not on the habits themselves" (p.122-3).

Many of Lecky's statements have a contemporary ring, especially in the realm of changing ingrained social attitudes toward minorities and the handicapped. Such attitudes are often at the core of the personality organization to the point where they are a stable feature of the unconscious. It may be difficult even for people who want to change and are able to intellectualize their attitudes to change beliefs at this deep-seated level. By the same token it must be realized that persons who have been members of a minority group all their lives have their own internalized system of beliefs about the world, and their relationships to it, their ability to control it, etc. If reality is a construct, as Piaget maintains, we need to examine the construct of the particular individuals that are the object of scrutiny. If, as Lecky avers, all behavior is motivated by the need for unity, then we can begin to understand particular notives or actions as expressions of that main motive, and to see why behavior that appears deleterious or even self-destructive, is rational in terms of maintaining self-consistency.

Phenomenological theories concentrate on the present. The most important factor in psychological understanding is to perceive the world through the eyes of the individual at a given moment in time. Contained within the present, however, are the person's interpretation of past and future. The way the past is perceived has more bearing on subsequent behavior than the reinforcement history, for example; but it is the future that becomes particularly salient in a teleological theory such as Lecky's. In the case of the adolescent, we need to know about the motives, goals, and anxieties that characterize this period, both for understanding current behavior and for predicting the future. Self-consistency is the unifying principle that allows the future to be predicted with some degree of confidence from the present.

Donvan and Adelson (1966) conducted an extensive study to explore adolescent conceptions of future time and adulthood. The adolescent straddles the two worlds of childhood and adulthood. The metaphor most commonly used to depict this status is that of the bridge; however, it is in some ways inapt. Passage between the two worlds is not simple and unidirectional. There is a great deal of wavering and backtracking and general broadening of viewpoint as though the adolescent were trying to encompass both worlds in an overall perspective. Adulthood is not just a prospect that the child sees ahead; it is a crucial component of daily life permeating all thoughts and activities. A more appropriate metaphor than the bridge is the picture puzzle, the future being a crucial piece that is missing. "The color and content of the piece are missing, but the shape is established, and bears an intimate relationship

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to bordering pieces. If the piece is really crucial -- as the future is in adolescent identity --, the whole puzzle depends for its interpretation and meaning on what the piece will look like " (p.22).

There are, of course, many ways in which the adolescent may orient toward the future. Is the future concept more general than specific, painted in broad strokes with the details left to later determination, or is it over-specific in some particulars? Where does the young person sit on the important dimension of reality-fantasy? How coherent is the view of the future? These were some of the questions addressed by the Donvan and Adelson study.

Two types of questions were asked: first, direct questions about plans and expectations, existence of a life plan, types of occupational and educational decisions to be made; second, indirect questions designed to probe the less formulated aspects and emotional aspects of the image, questions about daydreams, the type of adult most admired, and so forth. Junior high school students were interviewed for this purpose.

A major finding cutting across all dimensions was that of sex differences The authors had hypothesized that, because of the different roles assigned to the sexes in this culture, the identity problems posed for the two sexes would differ sharply. "The nature of his occupation plays a crucial defining role in a man's identity. The girl, on the other hand, depends on marriage for he critical defining element; she will take her self-definition, by and large, from the man she marries and the children she raises." (p.23). In assessing the findings, which did largely conform to this hypothesis, one must ask first to what extent did the authors' expectations color their interpretation of the data, and second, whether there have been changes in girls' self-perceptions since 1966. Whatever the answer to these questions, the results of this particular study showed a central difference between boys and girls in their posture toward future time. Boys had a relatively extended time perspective with a more or less coherent and developed notion of intervening steps, and a strong underpinning of motivation and commitment toward the desired goals. When the theme of achievement occurred in the girls' interviews, it usually related to the kind of man she would like to marry and her goals and aspirations for his work. Her own plans tended to be short range, to refer to the immediate future, the period of education and work that precedes marriage.

Another significant difference pertained to the degree of fantasy with which the future was invested. The occupational issue forms the core of masculine identity, and the adolescent boy can begin to choose and prepare for work. This activity lends itself to rational planning and specific preparation based on objective criteria. The girl faces a more ambiguous task, since marriage lies not in the immediate future but beyond it in some relatively undefined time. Moreover, there is the fact that the marital role is tied to the girl's sexual identity, and that she has had no experience (except vicariously through her mother) in the role. For these reasons, the authors believe, girls' notions about the future are heavily imbued with fantasy. There is a marked discontinuity between fantasy and realistic planning.*

*One may ask whether boys' fantasies about their future occupational role may not be equally unrealistic. Take, for instance, the boy who wanted to be a dentist because "It's a great life. You just say to the nurse, 'Keep Thursday afternoon free, I'm playing golf.'" Or the boys who are failing high school graduation requirements, but insist they are going to be lawyers and doctors.

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forexample, girls' daydreams focus largely on physical beauty and glamor, but there is little realistic effort toward change.

Can the same be said of adolescent boys and girls in the 1980s? Have 15 years of women's liberation changed the feminine view of the future for a large proportion of adolescents? Does the prospect of being a husband and father enter into the boys' calculations more than it did in 1966? Studies are needed to answer these questions.

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Cognitive-Intellectual

Maturational-Biological
Jensen's Genetic Theory

According to this theory, a person's level of intellectual ability is primarily a function of heredity. Environment is a factor, but only as a threshold variable, in the sense that unless the environment is severely restricted, changes in the environment will not affect development of the intellect appreciably.

Jensen hypothesizes two levels of learning ability. Level I, associative ability, involves both the automatic association of stimuli and responses in the lower cortex (classical conditioning) and learned associations. Digit memory, serial rote learning and paired-associate learning are included in this level of intellectual ability. Level II, conceptual ability, involves self-initiated transformation and elaboration of the stimulus material, such as occurs in concept learning and problem solving. Level II is the essential intelligence, the overall general factor of intellectual functioning.

Level I abilities appear to be evenly distributed across racial and social lines. By contrast, on Level II abilities, lower-class children's performance is significantly inferior. Jensen concludes that Level I is a necessary but not a sufficient condition of Level II, and that both abilities are required for successful school achievement. Since class differences are attributable to the hereditary factor, differences in educational attainment would seem to be unavoidable. However, all children should be taught by educational methods that maximize the intellectual abilities they have.

Gesell's Theory of Developmental Stages

Growth, both physical and mental, proceeds in a lawful, sequential fashion, bringing about changes both in form and function. It comes about as a result of forces inherent in the organism. The emergence of behaviors is determined by biological factors, and the ages at which particular skills emerge is highly predictable. All infants crawl before they walk, and babble before they utter words or formulate sentences, due to "powerful stabilizing factors, intrinsic rather than extrinsic, which preserve the balance of the total pattern and the direction of the growth trend. Maturation is, in a sense, a name for this regulatory mechanism" (1933, p. 232). Maturation is thus a prerequisite to learning. Given this premise, it follows that learning cannot be accelerated. "There is no conclusive evidence that practice and exercise even hasten the actual appearance of types of reaction like climbing and tower building. The time of appearance is fundamentally determined by the ripeness of neural structures" (1929, p. 134). Environmental factors simply stimulate, support, and in some cases modify growth.

Gesell's theory gives rise to a related concept, that of "readiness." For any performance, there is an opportune time when initial instruction should be introduced, if the child is to profit from tutoring and practice. The level of maturity at which the child will have the interest and ability to learn a new skill will vary, depending on the maturation of the neural pathways involved and the complexity of the skill itself. With maturation comes increased speed and precision, as well as increased muscular strength. Hence, any performance that relies heavily on one or more of these factors is unlikely to benefit from early instruction or premature practice.

Many studies were conducted to test Gesell's main hypothesis. Among the most important were the famous twin studies by Myrtle McGraw (1935), in which one twin was given specific instruction in various forms of physical activity such as climbing stairs, roller skating, and so forth, while the other was not. In general, the twin who did not receive instruction and practice rapidly reached the same level of performance once the requisite level of maturation had been reached. Her results further indicated that specific training may be given too early or too late to be effective, and that practice is definitely most productive when it is articulated with maturational level. In another study by Josephine Hilgard (1932), two-year-olds were encouraged to learn how to manipulate buttons and use scissors. After twelve weeks of such training, these children were superior to a group that had not had such assistance and encouragement. When the latter received training during the thirteenth week, however, they made rapid progress, and at the end of this one week of practice were as proficient as the experimental group.

Almost all the studies, of which the above two are representative, use very young subjects to examine the development of psychomotor variables, presumably because these variables are easier to observe and record, and because growth is more rapid in young children. It is interesting to note, however, that even in these studies it was revealed that, for some skills, maturation alone is not enough and that under certain conditions training can be advantageous. "Readiness" can refer to a much more complicated state than the development of neurons; in the case of reading readiness, for example, it includes interest and enthusiasm for reading,

72 reasonably wide experience, ability to do elementary abstract thinking, a fairly wide vocabulary, ability to discriminate auditory and visual forms, and a degree of emotional stability and social adjustment. It is clear that for the greater part of the range of human behavior, learning involves far more than is implied by the term maturation.

By use of longitudinal studies and film-recording techniques, Gesell and Ilg (1949) were able to document the appearance of specific behavior patterns rather specifically. In the case of stair climbing, for example, a single pattern was observed in eleven of the twelve children studied. Such detailed developmental schedules also provided the rationale for infant intelligence tests, since norms can readily be obtained from the inventory of specific behaviors. While it was easier to be precise at the earlier age levels, Gesell was sufficiently confident in the universal applicability of the biological principle of maturation to extend his theory to cover the adolescent years. His theory of adolescence is an integral part of his general theory, presenting a continuous picture of development from birth to young adulthood. As in his earlier work, Gesell's biologically oriented theory of predetermined maturation describes a chronological sequence of behaviors that is essentially normative and "more or less characteristic of the human species" (Gesell and Ames, 1956, p. 22). His descriptions suggest that, in spite of individual differences, twelve-year-olds (for Example) will have specific common characteristics that different them from eleven-year-olds or thirteen-year-olds.* Growth is thus a continuous process of emerging patterns. Yet it is a matter of common observation that progress is not continuous. Children give the impression of having acquired a skill, only to regress temporarily, before moving forward again. This much Gesell acknowledges. There is a principle of reciprocal interweaving at work, he asserts, that causes neuromuscular development to proceed in a manner that is more adequately represented by a spiral than a straight line, thus accounting for the customary oscillations in behavior. Plateaus are a well-known phenomenon in the learning of complex skills such as typing for example. In the early stages of learning progress is rapid, but is followed by a levelling off and then further growth spurts punctuated by plateaus. These plateaus are usually explained in terms of the need to consolidate many newly acquired subskills into a continuous smooth performance. There is also the possibility that they coincide with a point at which the novelty is wearing off and interest is beginning to flag, especially as more demands are made on the learner.

Although plateaus and regressions are more easily demonstrated with the acquisition of simple motor skills, Gesell's concept of "growth gradient" applies equally to the swings of behavior observed in adolescence. This period is marked by well-defined stages of development in the advance toward more complex and mature forms of behavior. For Gesell, adolescence is a crucial transition period between childhood and adulthood, extending from the age of eleven to the early twenties. The more important changes occur

*A caricature of Gesell's theory shows a five-year-old child mulling over a copy of The Child from Five to Ten and announcing gleefully, "Boy, what a stinker I'm gonna be when I'm six!"

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in the first five years, which he calls the period of "youth." Like Erikson, Gesell believes that the adolescent's central task is to find an identity. The process is initiated by the biologically controlled changes in glandular secretion, the development of primary and secondary sex characteristics, and general changes in physique and musculature. The biological principle extends beyond physical growth, however, to include the development of cognitive abilities and even attitudes. Hence, the composite picture at each age includes physical, cognitive, affective and social aspects, as may be seen from the following synopsis:

The 10-year-old is at the apex of the childhood cycle. This is a period of stability and acceptance of life as it is. The child is confident and sociable. He enjoys family activities and peer relationships with equal zest. Rebellion and disaffection with parents have yet to appear. There is physical equilibrium accompanied by abundant energy and enthusiasm for group projects and team games. Learning proceeds apace. Although children at this age appreciate the relative nature of moral rules, they also have a strong sense of fairness, and demand equitable treatment from both adults and peers.

The 11-year-old, already moving into the cycle of adolescence, is quite different. The physiological changes beginning to take place are reflected in violent swings in behavior, in moodiness and episodes of rebelliousness and negativism which affect relationships with both family and friends.

The 12-year-old, shows a renewed balance. Much of the turbulent and unpredictable behavior has disappeared, giving way to more reasonable modes of response. Sociability and enthusiasm are restored, and tolerance and good humor characterize his interpersonal relations. The antipathy toward the opposite sex found at 10 is reversed; there is strong interest in mixed group activities.

The 13-year-old, by contrast has become introspective and self-critical, sensitive to the moods of others, but more critical of them than formerly He has fewer friends, but he is more selective and his relationships with them are more intense. He is now a "teen" and keenly aware of his adolescent status. This awareness is intensified by the dramatic bodily changes taking place, changes he may wish to accelerate and exaggerate or to conceal. Periods of self-confidence are punctuated by bouts of self-denial or despair.

The 14-year-old, in turn experiences a return of the old exuberance and self-confidence. This is a plateau year in which he consolidates his relationships with peers and, in general, begins to expand his interest in people. He is fascinated by different personalities, including his own, and is prepared to discuss such matters endlessly. Heroes and public figures claim his attention, and he speculates at length on their experiences and feelings.

The 15-year-old, is beginning to show signs of the individual identity that will mark the culmination of the adolescent cycle. He can no longer be "readily summed up in a simple formula" (Gesell and Ames, 1956, p.214). His relatively consistent behavior is interspersed with rebellious episodes but these are more attributable to a growing spirit of independence than to unpredictable mood changes. He may be a perfectionist (cf.Erikson), but he applies these standards to himself as well as others. Because of his increased awareness of people and events, there is a greater potential for him to be led by others into good works or into delinquency.

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Together with his growing feelings of independence, this potential may result in precipitous actions such as running away from home or dropping out of school, actions which may lead to irreversible consequences that are later regretted.

The 16-year-old, has come a long way on the road to maturity. He has the self-control and self-confidence of an adult, is socially well-adjusted and independent. Rebellion is a thing of the past. The search for identity has progressed to the point where the youth is focussing on a future occupation and, in some cases, marriage plans. Relationships between the sexes are on a more comfortable basis than in the earlier years. Although the adolescent period extends into the twenties, the major changes have been completed, and the remaining years are devoted to playing out the scenarios already established during the period of youth. Hence, the yearly normative descriptions are no longer provided by Gesell beyond the sixteenth year.

Although Gesell emphasizes "continuity of the growth cycle," the above descriptions are remarkable for the contrast between children only one year apart. His adoption of the spiral model of development seems to have predisposed him to exaggerate these contrasts in an effort to emphasize the cyclical nature of growth. In so doing, he underestimates the range of individual differences at any given age, as well as the improbability that developmental changes will fit neatly into a schedule based on the calendar year.

Nevertheless, there are implications to be drawn from his theorizing. The spiral model probably has some validity and, indeed, is used by other theorists such as Erikson to explain recurring behavioral phenomena. Gesell believed his theory to have "Vast social implications -- implications for child guidance, for mental diagnosis, for health supervision, for the conduct of education, and for the very arrangements of our ways of living (1948, p.10). An obvious implication is that the school curriculum at any level should be based on the psychology of development. It was his hope that the laws of learning would "be reformulated in terms of the biology and physiology of development"(1946, p.298). The teacher and curriculum developer must have precise knowledge of the schedule of development for every skill or behavior pattern to be taught, since instruction and practice that are introduced too early or too late are either ineffective or possibly harmful. (At the very least they take up time that could be used more profitably.) Disciples of Gesell were fond of using the analogy of the bee pollinating a flower. There is a narrow period of time within which this possible. "Learning" is almost entirely a matter of maturation. This argument represents the extreme position on the "maturation" end of a theoretical continium. At the opposite pole would be found a doctrine akin to the Bruner postulate that any subject may be taught at some level at any age. The truth probably lies somewhere between these two extremes. However, Gesell's theory has been very influential in counterbalancing the dominance of behaviorism in America, and is in the direct tradition of maturational theorists from Rousseau to Chomsky and Piaget.

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Interactionist
Piaget's Genetic Epistemology

For Piaget, the growth of intelligence is a matter of adaptation to the changing environment. Adaptation consists of two complementary processes: assimilation and accommodation. Piaget seems to view assimilation in very much the same way as the Gestalt psychologists. The organism takes in those kinds of material (food, information, etc.) for which it is biologically suited; but the amount and the way in which the material is assimilated depends on the structures with which it is currently equipped. In the intellectual sphere, these structures consist of schemata, and these schemata develop and become both broader and more differentiated as the person grows. The infant, for example, has a very vague, yet global schema of food; with experience this schema will become highly complex.

Growth in intelligence is continuous but the qualitative changes are so great that it is possible to discern maturational stages, which are rather broad, subject to individual differences in attainment, yet universal in their application and invariant in sequence.

Sensorimotor period (0-2 years). Intelligence at this stage consists of coordinating motor responses to external and internal stimulation. Building on the reflexes present at birth, the infant develops various schemata of looking, grasping, etc., which become coordinated into complex responses. The most significant learning that takes place during this period is the understanding of object permanence.

Preoperational period (2-7 years). Once the child has realized that objects continue to exist when they are out of sight and hearing, it becomes possible to substitute for them in thought and action by the use of symbolic representation. The child's use of signifiers to stand for other objects and events is seen in imaginative play. The advent of language provides the child with a much broader repertoire of signifiers and frees the child from the need for immediate concrete experience in order to think about an object.

The major characteristic of this period is egocentrism, by which is meant the inability to "decenter," that is to move outside one's frame of reference (perceptual or experiential). The concept of egocentrism led Piaget to develop a series of famous "conservation" experiments (the "mountain" test, the "balls of clay" and "beakers" tasks, among others) showing the young child's inability to relinquish a particular perspective and to reason about changes (or lack of changes) that must of necessity have taken place in changing that perspective. Egocentrism is also manifest in the child's beliefs about the nature of the physical world and human omnipotence with respect to natural phenomena.

Although egocentrism is a characteristic that is found primarily during the preoperational period, psychologists are coming to realize increasingly that it may also be found in adolescence and adulthood. In times of stress when personal values are threatened, or simply due to lack of socialization in certain spheres of inquiry, on certain

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topics of discussion, the adult may display an egocentrism not unlike that of the preschooler.

Concrete operational period (7 - 11 years). As the child emerges from the preoperational period, certain skills (or more accurately, modes of thought) become apparent: the ability to order objects on a given dimension such as length, to classify and subclassify objects on one, two, and three qualities, to conserve number and quantity in spite of physical manipulations, to reason about cause and effect in the natural world, and eventually, in the psychological realm. The use of language to represent events is now broadened by the ability to read and write, thus enabling the child to learn from vicarious, as well as immediate experience.

"Operations," in Piaget's terminology, refers to the ability to perform intellectual operations on data, to reason about their relationships. The chief limitation at the concrete-operational stage is that the child must have the objects present in order to perfor these operations. Manipulation in thought comes only at the formal operational level.

Muuss (1975) summarizes the four concrete-operational groupings described by Piaget as follows:

1. Combinativity. Two or more classes may be combined into a single all-inclusive class, e.g., boys and girls = children. This operation also leads to the realization that the class of children must be larger than the class of boys or girls taken separately.

2. Reversibility. Every logical or mathematical operation is reversible. The class of children may be broken down again into boys and girls. Moreover, children minus boys = girls, and children minus girls = boys. Reversibility is an important index of the child's maturity of thought.

3. Associativity. This operation enables the child to adopt diverse routes to the same goal. If asked to assembly 13 balls of different colors, for example, the child realizes that there are many combinations that satisfy the requirement.

4. Identity or nullifiability. An operation combined with its opposite becomes nullified, e.g., driving one mile west followed by one mile east returns one to the point of origin.

Formal operational period (11-15 years). This is the final stage of cognitive development culminating in the ability to use all the intellectual operations of the adult. In contrast to the necessity for immediate experience of the concrete operational period, formal operations are

characterized by hypothetical and deductive reasoning. Using propositions instead of objects, the adolescent analyzes a problem and hypothesizes several possible outcomes without acting on any of them. Possibility and probability, as well as reality, assume importance. The reasoning is abstract and logical, hence it can be checked for validity, in addition to being tested against reality. Abstractions are built on abstractions, and operations performed on operations.

As previously noted, since growth is dependent on the assimilation of, and the accommodation to experience, it is necessarily slow and gradual. The child does not move abruptly from one stage into the next. Similarly, at either end of any particular stage the child is more likely to resemble a child in the immediately adjacent stage. At the beginning of the formal-operational period, between the ages of 11 and 13, for example, the preadolescent is in transition. It is during the next two years that the adolescent's thinking approximates that of the adult. Hence it is possible to discern two distinct stages within the formal operations period in which the mind undergoes reorganization.

Another consequence of the gradual nature of intellectual development and its dependence on experience is found in the fact that formal operations may never be reached by some poeple in certain areas. Growth comes about when new experiences or new information upset the person's mental equilibrium. If the new information is too alien to the person's experience or beyond comprehension, it will, of course, be ignored and thus will not upset the equilibrium. Typically, however, new information does set up a stage of disequilibrium, which will persist until, through assimilation and accommodation, a new level of equilibrium is reached. According to Piaget, a primary stimulus for disequilibrium is to be found in the conversation of peers who challenge the child's prevailing viewpoint. These socializing experiences are critical to the development of operational thought at each successive stage. An important corollary of this principle is that the adolescent's peer groups will have a profound effect on the particular directions intellectual development will take.

An important concept in Piaget's theory is that of <u>décalage</u>. He distinguishes two kinds, horizontal and vertical <u>décalage</u>. Vertical <u>décalage</u> refers to the fact that an individual may return at different times in the lifespan to the same problem, but will use different strategies and modes of thought to address it, a phenomenon also noted in Erickson's theory. Horizontal <u>décalage</u> reflects varying levels of experience in different areas; for example, the concrete-operational child at a particular time may have acquired the concepts of conservation but not that of classification or may understand the conservation of number, but not of quantity.

Similarly, at the formal-operational level, there is increasing differentiation of mental abilities (Elkind, 1971, pp.122-123). Both personal interests and the increased specialization of the secondary school curriculum contribute to this differentiation.

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Egocentrism in adolescence. In his paper by this title, Elkind (1967) discusses the unique form that egocentrism takes at each stage of development. Each stage is treated as being primarily concerned with one major cognitive task. The major cognitive task of infancy is "the conquest of the object," and the egocentrism of this stage is seen as the difficulty in differentiating between the object itself and the experience of the object. During the preschool period, the major cognitive task is "the conquest of the symbol," and the egocentrism of this period consists in a lack of differentiation between symbol and referent. With the emergence of concrete operations, the task is that of "mastering classes, relations, and quantities," and here it is the "inability to differentiate clearly between mental constructions and perceptual givens" which constitutes the egocentrism of middle childhood.

The major cognitive task of early adolescence is "the conquest of thought." "Formal operational thought not only enables the adolescent to conceptualize his thought, it also permits him to conceptualize the thought of other people ... (this is) the crux of adolescent egocentrism." (Muuss, p.43). The adolescent comes to believe that other people are as preoccupied with his appearance and behavior as he is. This belief leads to the anticipation of others' reactions and to the construction of an imaginary audience that reflects his current feelings about himself. The preoccupation with self also leads to "the personal fable," the belief that one's own feelings and experiences are unique in their intensity. Examples abound that illustrate "how adolescent egocentrism, as manifested in the imaginary audience and in the personal fable, can help provide a rationale for some adolescent behavior," and can also provide "a useful starting point for any attempt to reconcile cognitive structure and the dynamics of personality."

Again, it is social experience that modifies (though may not entirely dispel) these elements of egocentric thought. The adolescent comes to realize that members of the peer group are similarly preoccupied with their own fantasies. Still, as Looft (1971, p.490) points out, remnants of the personal fable may persist or "go underground"; the adolescent "understands the fallacy of the theory of uniqueness, but affectively continues to derive enjoyment from it in imagination."

It is perhaps, the preoccupation with self that leads the young person to question the basic meaning and value of human existence. The capacity for abstract thought leads to idealism and euphoria alternating with periods of despair and cynicism. Concern with national and global problems leads to comparisons of what could be with what is, and to an impatience with imperfections of the social world adults have created and seem unable or unwilling to change. Political leaders have long recognized the value of harnessing the idealism and energy of youth to particular causes. "The capacity for engagement in meaningful social activity is clearly present in young people in every country of the world. The challenge to the behavioral scientist is to help his own country develop the forms and means to enable the adolescent to take a leading role in the struggle for the attainment of a world in which peace, freedom, and economic opportunity are omnipresent" (Eisenberg, 1965).

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In 1966, Jerome Bruner challenged the Piagetian interpretation of findings related to the conservation experiments, pointing out that the format of the problem or the language in which it is couched may be directly responsible for immature performance, rather than the lack of reasoning ability as Piaget hypothesizes. Donaldson (1978) has reiterated this argument, citing many recent studies to bolster her contention. Most of these studies refer to the transition from preoperational to concrete-operational thought; however, the same argument, if valid, would apply at other levels. For example, Donaldson cites a study by Wason and Johnson-Laird (1972) in which adults were given two versions of a task, one using highly abstract symbols, the other using familiar materials. Their conclusion was that a rule "proved so recalcitrant when its terms and conditions were arbitrary has become trivially easy when it is embodied in a real task" (p. 81). Similarly, Kuhn, Ho and Adams (1979) raise a basic issue in the assessment of formal reasoning: "To what extent does the absence of a formal-operational level of performance reflect genuine absence of the underlying reasoning competencies, as opposed to difficulties in dealing with the format in terms of which these competencies are being assessed?" (p. 1133). This question is especially critical in relation to the diagnosis of deaf students' abilities as well as in terms of the most appropriate formats for the presentation of curricular materials.

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Hall's Biogenetic Theory

Prior to 1900, theories of human development were based on philosophical thought, religious beliefs or personal experience. The child was viewed as a miniature adult, hence there was no differentation between childhood and adolescence. Growth was conceived as continuous and quantitative.

Darwin's work on evolution has been cited as the single most important force in establishing child psychology as a scientific discipline (Mussen, Conger, and Kagan, 1974), and was unquestionably the immediate forerunner to the first systematic theory on child development, that of G. Stanley Hall. Hall's classic book on adolescence, appearing in 1904, was the first to draw a significant distinction between childhood and adolescence. In accordance with his theory of recapitulation, which states that each human being relives the stages of man's evolution, Hall viewed adolescence as the transition between the primitive ancestral child and the civilized man, a period dominated by emotional storm and stress that finally gave way to the emerging rationality of adulthood. In this sense, Hall's is a stage theory. In fact, given the predetermined maturational unfolding that is their cornerstone, biogenetic theories tend of necessity to be stage theories. The same phenomenon may be observed, regardless of the content area, as for example, in biologically based theories of language development. The converse, however, is not necessarily true. Theories that are not biogenetic, that tend to place greater emphasis on environmental than on biological factors may or may not be stage theories.

Hence a corollary of Hall's theory of recapitulation in his concept of stages of human development. The first stage of infancy re-enacts the animal stage of the human race. Childhood corresponds to the cultural epoch when hunting and fishing were primary activities as reflected in the games of children 4 to 8 years old. Youth (8 - 12) reflects a more recent era of savagery. Adolescence, the period extending from puberty to adulthood, is dominated by the emotional life, corresponding to a time when the human race was in a turbulent stage of transition from savagery to civilization. It is characterized by "Sturm und Drang" (storm and stress). The adolescent runs the gamut of emotions, oscillating between a high level of energy and exuberance and the depths of lethargy and despair. Selfishness and altruism are found in the same person, as are vanity and self-deprecation. The adolescent craves solitude while yearning for love and friendship.

Hall assumed that development was brought about by physiological factors that were genetically determined. The sequence occurs in a universal and unchangeable pattern, which is largely unaffected by environmental factors. The inevitability of undesirable behavior calls for acceptance and tolerance on the part of parents and teachers. Corrective measures are of no avail. Only time and maturation can correct this situation. Permissiveness and leniency are the order of the day

Hall's formulations came to be viewed as extreme, and a considerable accumulation of evidence testifying to the importance of socio-cultural factors caused his theory to fall into decline. Nevertheless, Hall's work gives us the first flesh-and-blood picture of the adolescent in contemporary psychology.

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Freud's Psychoanalytic Theory

Like Hall and Gesell, Freud emphasized that human development is essentially biological, consisting of a series of five biologically determined stages that extend from birth to adolescence. Adult personality is largely determined by the strength of certain innate drives or instincts, and the ways in which the individual by dint of experience learns to cope with these drives in socially acceptable ways. Much of this learning (and hence the blueprint for adult personality) is accomplished during the first five years. In cases where the instincts are extremely demanding or the social restrictions repressive, inner conflict, often at the unconscious level, may ensue.

Oral Stage (0 - 1 year). The basic drive is to obtain nourishment and hence pleasure through the mouth. Satisfaction of this universal need leads not only to immediate contentment on the part of the infant, but to long-term security and an optimistic disposition. Thwarting of the instinct, by contrast, leads to anxiety and frustration and to later manifestations of distrust and insecurity.

Anal Stage (2 - 3 years). Primary gratification at this stage is experienced by eliminating or withholding feces. The child's ability to control his sphincter muscles is met with a corresponding social expectation that he will become toilet trained. The ensuing struggle between the child's growing autonomy and interest in his body and parental demands for self-control carries the potential for internal conflict and subsequent personality disorders.

Phallic Stage (4 - 5 years). This stage is characterized by erotic self-stimulation of the genital organs. These preliminary sexual stirrings focus attention on the opposite-sex parent as a love object. In the case of boys, competition and rivalry with the father for the mother's love is known as the Oedipus Complex. It is followed by the castration complex or anxiety that the father, being infinitely more powerful, will avenge this usurpation by cutting off the little boy's penis. This anxiety becomes so overwhelming that the boy abandons the desired love object and begins to identify with his father, thus resolving the Oedipal conflict.

For the girl, the Oedipal situation is somewhat different. In her case, the dev lopment of penis envy leads to hostility and resentment to the mother (wl ?), and hence to a transfer to the father as a suitable love object. (The reasoning here seems to be that) since the mother is less powerful (or less vindictive?) and hence the girl does not experience castration anxiety, there is not the same compulsion to abandon the love object, and the girl's attachment to her father may continue indefinitely.

The universality of the Oedipus Complex has been generally accepted, though some anthropological evidence (Malinowski, 1927, 1961) suggests that the phenomenon is more culturally than biologically determined. More recently, the mother's long-erm role in her daughter's search for identity, which was ignored by Freud, has been systematically explored (Friday, 1977).

Latency Stage (6 - 12 years). Between 6 and 10 or 11, the child enters a period of relative calm in which the libido is not active and psychic energy is focussed on social concerns. The ego, as a mediator between libidinal demands and social regulations is dominant. Peer groups assume greater importance, and activities are pursued with companions of the same sex.

Genital Stage (13 - 18 years). The onset of puberty sees a reawakening of libidinal interest. Sexuality now assumes its adult form, and the adolescent seeks new sources of gratification. Muuss (1968) suggests that adolescent sexuality manifest itself in three ways: (1) through external stimulation of the erogenous zones; (2) through internal tension and physiolcgical need to release sexual products (a condition not present in childhood sexuality); and (3) through psychological "sexual excitation" which may be influcenced by the two former manifestations of sexuality. (Thornburg, 1975, p.27).

The surge of sexual energy at this time is tied to aspects of physical maturation. The development of genital organs and production by the endocrine system of high levels of sex hormones, predispose the adolescent to notice and to seek out forms of sexual stimulation that are readily available in this culture.

As in early childhood, the libidinal drive in its renewed strength may find itself in direct conflict with societal mores. Problems that were poorly resolved at the earlier stage may recur, or new tensions may arise as the adolescent attempts to cope with burgeoning maturity, strong feelings, and parental or societal attitudes.

Environmental

Mead's Cultural Theory

The first major challenge to Hall's storm-and-stress theory came from Margaret Mead, a cultural anthropologist, who studied adolescent behavior in Samoa and New Guinea (Mead, 1925, 1935). Finding an absence of stress in adolescence in some primitive cultures she was led to conclude that stress is a function of cultural rather than maturational factors. Stress is caused by the fact that prolonged education and prolonged dependence reduce choices for adolescents just at the point where they feel that adult privileges are warranted. The conflict induced by these opposing forces may, in fact, interfere with the attainment of maturity.

Another concept drawn from crosscultural studies which may be useful in looking at adolescence is that of discontinuity. This refers to the abruptness with which the transition from childhood to adulthood occurs. In some cultures, puberty rites may constitute in a single ceremony a well-marked discontinuity in social status, duties, responsibilities, and privileges. Continuity of cultural conditioning is the rule in Western societies where gradual training for independence and responsibility starts in early childhood. It is interesting to note that discontinuity does not imply stress at adolescence, nor continuity lack of stress. Continuity and discontiuity have been extensively explored in a broad variety of cultures by Ruth Benedict (1950, 1954), as well as their implications for self-concept and social adaptation.

The Issue of Continuity vs. Discontinuity

Is development continuous or does it proceed in a series of well-defined stages? Starting with Hall, biological-maturational theorists tended to incorporate the notion of stages in some form, whereas theories of cultural relativism or those that emphasized the importance of the environment tended to be more impressed by the continuity of development. For Hall, development is "saltatory," that is to say, new, previously nonexistent functions come into being at adolescence, and other psychic functions undergo reconstruction to the point where "every trait and faculty is liable to exaggeration and excess" (1916, p.xiii-vix). *Margaret Mead and Ruth Benedict were among the first to discount the notion of necessary stages such as the period of storm-and-stress posited by Hall. Even more adamant in this respect was Leta Hollingworth, who was strongly influenced by the earlier works of cultural anthropologists. In her book, The Psychology of Adolescence (1928), Hollingworth emphasized the idea of continuity and the gradual nature of the changes that occur in adolescence. "The child grows by imperceptible degrees into the adolescent, and the adolescent turns by gradual degrees into the adult" (p.1). She attacked Hall directly. "The quality of the organism is a constant, which shows itself from the beginning to the end of the individual life . . . This widespread myth that every child is a changeling, who at puberty comes forth as a different personality, is doubtless a survival in folklore of the ceremonial rebirth, which constituted the formal initiation of our savage ancestors into manhood and womanhood" (p.16-17). This is a clear reference to Hall's doctrine of recapitulation. However, it is the question of continuity, not recapitulation, that is of interest here. Hollingworth's position was that the appearance of sudden changes in social status accorded the adolescent through various initiation rites has confused us into thinking they reflect some biological or maturational change in the organism. The opposite view, of course, would be that the various forms of puberty rites simply acknowledge or reinforce the biological givens of physical maturation. Hollingworth thus went further than either Mead or Benedict in rejecting the discontinuity hypothesis. Benedict, for example, although maintaining that development is gradual and continuous by nature, believed that stages can be culturally induced by discontinuities in child-rearing methods or educational practice. Mead, as we have seen, undertook her studies in New Guinea not to show that the discontinuities of American adolescence did not exist, but to demonstrate that they were a function of the culture rather than a necessary accompaniment of growth. Interestingly enough, in her later writings, Mead tended to give more credit to biogenetic inheritance as a determining factor in human development than she did in Coming of Age in Samoa and other earlier publications (Muuss, 1968, p.80). She was forced to this conclusion to some extent by the finding, among highly inbred and isolated groups with uniform patterns of child-rearing, of "remarkable differences in physique and apparent temperament" (1949, p.133). In fact, cultural anthropology as a field has moved away

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* Of course, there is no necessary connection between biological-maturational and stage-discontinuity theories on the one hand or environmental and continuity theories on the other. In fact, the two issues could, in principle, be completely independent.

from its earlier position of cultural relativism to a broader theoretical position that incorporates biogenetic factors. In the course of these changes, Hollingworth's theory has also come under attack as underestimating the potential for radical changes of personality in adolescence (Allport, 1937, p.209).

In recent years, stage theories have enjoyed a new degree of almost universal acceptance. The decline of behaviorism, which had dominated the American psychological scence for nearly half a century, led to a resurgence of interest in aspects of human behavior that are tied to biological inheritance and hence are universal in nature. Chomsky and Lenneberg see the acquisition of language as following some prescribed pattern based on the unique neurological potential of the human brain. Piaget views the growth of intelligence as following the same biological laws of assimilation and accommodation as the physical organism; and Erikson, building on Freud's biological model of the personality, has elaborated the latter's concept of stages to incorporate environmental and cultural factors. In brief, we may say that the theories covering every aspect of development that are influential today are those that emphasize discontinuity. Whether this discontinuity is seen as an inevitable and necessary concomitant of the stages seems to be a matter of the particular theory. Piaget seems to be saying that the discontinuity between concrete and formal operations is unavoidable, inasmuch as younger children are incapable of using higher modes of thought until their intellectual powers have sufficiently matured, and that this can only happen as a result of vast amounts of appropriate experience. Erikson, on the other hand, while acknowledging that adolescence is a unique and dramatic period in the lifespan of the individual, might be inclined to say that this fact stems from the particular nature of the cultural pressures to which the adolescent is subjected in this society. And this stance would seem to be the one that is generally accepted today. In brief, on the continuity-discontinuity issue, we may conclude that the broad sweep of human development proceeds in a gradual and continuous manner, but that nevertheless pressures or other factors induced by the culture or the special circumstances in which an individual finds himself may cause major or minor discontinuities that could have lasting effects.

A corollary question is whether continuity and discontinuity are beneficial or detrimental in their effects on development. Again, we may suspect the answer lies somewhere in the middle. Discontinuities that are too sudden or too severe may have extremely harmful consequences, especially if they occur in the earlier years of childhood, or immediately following a long uninterrupted period of continuity. On the other hand, the introduction of some kind of discontinuity in the form of a change in educational method, or a shift in the psychological basis of the child's interpersonal relations with significant members of his immediate circle, may provide the very stimulus that is needed to propel him to the next level of development. This seems to be what Piaget is advocating when he suggests that maximum growth and learning take place when the mind is forced into a state of disequilibrium by the presentation of stimuli that cannot be readily assimilated without some reorganization of the existing schemata.

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In view of the indisputable range of individual differences among children, it seems safe to hypothesize that what constitutes an "acceptable" instance of discontinuity will depend first on the mental state of the child at any given time, and second on the life history of discontinuities to which he has been subjected. If a child is accustomed to frequest and abrupt discontinuities, one more may be taken instride; on the other hand, it may be "the straw that breaks the camel's back." This means that adults who have control over what happens to him, must exercise astute clinical judgment and sensitivity to the child's individual needs in making decisions about inducing some form of discontinuity such as changing the school or sending the child to a foster home.

Discontinuties in the Life of the Deaf Student

In general, handicapped students are more liable to experience discontinuities in their lives and are less well equipped to cope with them. In the case of the deaf person, the history of discontinuity begins in early childhood. If the child is not born deaf, development will probably proceed on a normal course during the first critical years. The child will learn about object constancies and the rhythms and regularities of daily events. He will establish a basis of trust in his interpersonal relations. He may also acquire a fair degree of langugage through which he can communicate with others. With the onset of deafness, everything changes. The parents have a hard time assimilating this traumatic event, and their behavior toward the child undergoes drastic modifications. It may become rejecting or oversolicitous. Meanwhile, the child is trying to cope with the discontinuities in his perceptual world. He can no longer hear the sounds he previously heard. When he tries to communicate, he cannot hear the responses to his questions and comments. Gradually, through lack of auditory feedback, his own verbal ability begins to decline, and he becomes less comprehensible to others, thus increasing his frustration.

If the child is born deaf, it may appear as though some of these discontinuities will be avoided, and this may be the case. However, in many cases, a long period elapses before the parents become aware that their child is deaf, and when they do realize this unpleasant fact, the same pattern of rejection and disbelief or overprotection may ensue. In these circumstances, the child may not even have received the experiences needed to establish the most basic cognitive and affective foundation for later learning, as was the case with the child who becomes deaf adventitiously.

Sooner or later, the parents must make the monumental decision regarding the type of education they wish their deaf child to receive. Admission to a residential school may represent a form of severe discontinuity, especially if the child has not established trust, autonomy, and inititative. On the other hand, attendance at a regular day school may offer a sharp contrast to the home in activities and people, especially if he has been sheltered by the family for the greater part of his previous existence. Often parents, in desperation, switch from one form of education or treatment to another without adequate assessment of the effects of these changes on the child, irrespective of the merits of the treatment itself.

By the time he reaches the age of high school and college, the deaf child may have experienced many more forms of discontinuity than his hearing counterpart. On the other hand, he is expected to face the same developmental tasks as everyone else (the expectations may be somewhat modified, but the tasks themselves are essentially the same), while having fewer resources at his disposal and greater impediments with which to contend. It would not be too surprising to find the deaf youth totally ill-prepared to deal with the developmental tasks of adolescence with which hearing persons themselves have so many problems. Lack of experience may exacerbate the difficulties inherent in the task of distinguishing between fantasy and reality, especially since the "reality" of the deaf person's potential is not readily discernible even to a trained and objective observer. The process of coming to terms with himself, his abilities and desires, in short of establishing a workable identity, may be much more difficult and protracted than is usually the case with the non-handicapped. There is also the opposite danger that the process may not be difficult enough, that the deaf person may underestimate himself, be willing to settle for too little, rather than engage in the painful struggle of carving out an active and meaningful life for himself.

Quigley (1974) points out that, whereas the proportion of college attendance among the hearing rose 50 per cent in the decade from 1960 to 1970, the college population of deaf students in all types of institutions of higher education quadrupled during the same period. The demands for less restrictive admission requirements by minority groups seeking economic and social justice produced increased resources and programs for students who formerly had no chance of being admitted to college. The benefits of changed admission policies and attitudes on the part of university administrations extended to other minority groups, including the deaf. Hence, if going to college is a disruptive experience for the deaf adolescent, we must keep in mind that there are also more of them facing it than formerly. The development of higher education programs for deaf students has produced greater choices than formerly in the range of educational alternatives available to them. Although, as Quigley, Jenne and Phillips (1968) point out, a system of specialized facilities and programs for a small population can never duplicate the vast array of educational opportunities available to the general population, it must be recognized that a sudden increase in the range of choices both for the group as a whole and for individual members can create relative discontinuity and confusion, especially where the new programs themselves are radical in approach or not grafted on to the prevailing culture. It would seem that improvement in the range of choices must be accompanied by superior orientation and counseling programs.

Parallel to the increased educational programs, however, has come a restriction in the range of vocational opportunities for deaf persons. McCay Vernon has listed among the crises* of the deaf the alarming increase in unemployment, the elimination of many unskilled and skilled jobs through automation, and the overall shift in the world of work to white collar jobs in industry. These trends, he argues, point to the need for more work adjustment programs that embody a treatment process utilizing aspects of work to modify behavior (Hoffman, 1972). The Work Adjustment Project at

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* Vernon, of course, is using the term "crisis" in the usual, not the Eriksonian sense.

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the University of Minnesota has defined work adjustment as a "function of the degree of correspondence (agreement) between an individual and his work environments." The individual brings to the workplace certain occupational skills and preferences, while the job carries certain ability requirements and opportunities for specific forms of reinforcement. The level of correspondence between the abilities of the individual and the ability requirements of the job is referred to as satisfactoriness. The level of correspondence between the individual's needs and preferences and the reinforcing systems of the job is referred to as satisfaction. Both satisfactoriness and satisfaction are prerequisite to occupational success. This definition, while providing a tentative frame of reference, gives rise to several interesting and important questions.

1. With appropriate abilities for certain specific jobs, can the individual communicate his capacity successfully enough to be judged satisfactory, as he should, or does special provision need to be made?

2. If the job reinforcers (satisfiers) match the individual's psychological needs, will they be perceived by the individual, or does some tailoring of the administration of rewards need to be done, so that they will be perceived and the deaf worker will be satisfied with the job? (Lofquist, 1970)

Vernon maintains that, although the central problem in deaf people's work adjustment is communication, the deaf person's education is, in most instances, a greater disability than his deafness. Whatever the merits of this statement, a study by Adler in 1970 indicated that the vocational development of deaf adolescents differs from that of hearing adolescents. Using a modified version of the Career Pattern Study developed by Super, the study suggested that existing programs for training and orientation to work have little impact on deaf adolescents. It is interesting to speculate whether the reason might be that deaf adolescents are pre-occupied with the crises characteristic of earlier Eriksonian stages, and thus ill-prepared to assimilate information relevent to the task of establishing an occupational identity. Some credence may be given to this supposition by Burke's observation (1969) that "the vocational rehabilitation program will uncover a number of hard-core emotional problems that call for solution before case services can become effective. The goal of the program, he states, is for deaf clients to develop a deeper awareness of themselves and their impact on other people, as well as a better insight into their own feelings about their relationships with the hearing population.

For the above reasons, counseling with the deaf has come to be defined as process designed to help the clients accomplish the developmental tasks of the hearing and to prepare them for a more satisfactory adjustment to life through productive activity (cf. Erikson's patters of industry). The problems cannot be solved by the giving of occupational information or the administration of tests. Some type of reconstruction of relevant areas of the personality appears to be required (Neff, 1968, italics added). Erikson's theory of the successive acquisition of dimensions of social interaction would appear to be helpful in suggesting what these relevant

personality dimensions might be. As Ann Glass (1974) points out, in the case of many deaf persons, it is habilitation that is required, because they are not to be restored but started on their way to maximum social, emotional, and vocational functioning. Reverting to Lofquist's second question, however, it must be reiterated that the individual's perception of himself and his level of functioning is equally critical. During the initial attempts to establish vocational identity, some role diffusion will normally exist. Adolescents at this stage normally over-identify with movie heroes, group leaders, athletic champions, and so on, even to the point of losing their own identity. At this point, he rarely identifies with his parents, since the task is to separate his identity from theirs. However, there is desperate need for social belonging. The peer group, the clique, or the gang help the adolescent to find his own ideal within a social context. He is willing to submerge his identity in that of the group and to accept almost total submission to its values and mores as a "necessary defense" against the dangers of self-diffusion. For the deaf adolescent, whether he chooses to identify exclusively with his deaf peers or with the larger world of all adolescents could have a profound effect on long-range development, and especially upon the merging of the ideal and the real which appears to be a prerequisite to successful work adjustment.

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Erikson's Psychosocial Theory

Early psychoanalytic theory was built on the insights gained by Freud in the course of his clinical practice with neurotic patients, and thus tended to concentrate on the disturbed rather than the normal personality, and to overemphasize the individual and his relationships with his immediate family, while neglecting the role of the larger society. For these reasons, psychoanalytic theory came under heavy criticism, especially from sociologists, who viewed the impact of the culture as predominant in personality formation.

Erickson's contributions to psychoanalytic theory, while firmly based on Freudian principles, have done much to meet these criticisms. Two major modifications of the basic theory deserve special attention. First, by extending the development of personality through the duration of the lifespan, Erikson has provided a correction for the Freudian overemphasis on early childhood experiences. Second, by elevating the ego into greater prominence relative to the id and superego, he has made the healthy personality the focus of attention, in sharp contrast to Freud's extrapolations to normal persons from the study of neurotics. Moreover, both these modifications provide the interface of the individual with society that was sadly lacking in the original theory. In fact, Erikson's own work with the Sioux and Yurok Indian tribes, carried out in the best anthropological tradition, and his later studies of Gandhi and Martin Luther which introduce the new wave of psychohistory, are in the mainstream of American social thought of this century, and reveal a sensitivity to the alienation and uprootedness that have become basic concepts in contemporary sociological theory.

Erikson's theory is epigenetic in the sense that it conceives the healthy ego as developing through a succession of stages throughout the lifespan. Each stage imposes a new task, but the social importance of these tasks is such as to make them more in the nature of crises, which is the term Erikson uses. Passage through each stage is dependent on the successful resolution of previous crises, and in turn makes a new dimension of social interaction possible. An important aspect of the crises is that they represent a tension between opposite polarities which is not resolved by the complete conquest of the negative polarity. To the contrary, success is defined as the achievement of a <u>balance</u> that is slightly in favor of positive over negative, the implication being that both are necessary for healthy resolution of the crisis. Another feature of the stages is that the crisis is never completely resolved for all time. Though each stage has its characteristic problem which becomes the preoccupation of that age, traces of the problem may be discerned at both earlier and later stages. For example, the problem of establishing an identity is especially crucial at adolescence, but it may erupt again in the form of the mid-life crisis. Helen Lynd (1965) shows that an analogy with the individual life history may be drawn for the long historical view of the human species. People of any age have a kind of temporal centrism which may be as constraining to the outlook as ethnocentrism. In every age we find the recurring questions: Who am I? and Where do I belong? But it is manifest that the recurrent question of

Self identify is today in the forefront of awareness. In the last quarter of a century we have been forced as a people to assimilate the implications of an economy of potential abundance, the import of instant communication throughout the world, the fall of empires, and the emergence of nations, the horrors of concentration camps and atomic war, of pollution and carcinogens, and fundamental changes in the Puritan ethic on which our nation was founded. Each of these historial developments have given our search for identity special possibilities, special difficulties, and our own peculiar version of its importance. These facts are reflected and magnified in the adolescent's search for his own identity during this period of history.

When a question is of particular importance, as the question of identity is at present, it receives special attention from social scientists who label and codify its different aspects, thus raising public consciousness of the phenomenon. When the object of scrutiny is the self, ready access to terminology and analysis results in increased preoccupation with every aspect of subjective existence. The proliferation of popular terms and cliches, (anomie, escape from freedom, the age of conformity, and so on), may become a substitute for thought leading to a reliance on categories that may sometimes act as barriers instead of a means of access to understanding (pp 13-15).

In figure 1, the successive stages are placed on the diagonal in order to depict graphically the cyclical and recurring nature of these problems so crucial to healthy development. As might be expected from this allegiance to the psychoanalytic tradition, the early stages of Erikson's schema correspond closely to those of Freudian psychology, the difference being that whereas Freud, by concentrating on the location of the erogenous zones, rooted his theory in biology, Erikson emphasizes the psychosocial dimension as reflected in the events and climate of the immediate culture. The first stage bears some resemblance to Freud's oral stage where the task is to establish, in Erikson's own words, patterns of basic trust over mistrust. The degree to which these patterns are successfully established depends primarily on the quality of maternal care seen in attending to the infant's needs and providing him with love and stimulation. Where this is adequate, the infant will develop attitudes of trust and confidence in himself and other people. If caretaking is inadequate or irregular, an attitude of passivity and helplessness combined with suspicion and mistrust will become enduring personality traits. By way of illustration, Erikson cites the studies of Rene Spitz on institutionalized children, whose physical needs were adequately met, but who lacked the cuddling and playing that children in normal homes receive from their parents. As these children reached early childhood, they exhibited the typical characteristics of apathy and joylessness that have come to be associated with institutionalized children. Additionally, they seemed extremely vulnerable to recurring ailments and diseases, and several of them actually died. Children who survive such early treatment, Erikson hypothesizes, will succumb to a "mild but chronic state of mourning which may give a depressive undertone to the whole remainder of life" (1959, p.60).

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During the second and third years of life, which correspond to Freud's anal stage, the crisis revolves around the infant's need to establish autonomy. The negative pole of this dimension is shame and doubt. While it is the maturation of his intellectual and motor abilities that propels the child into this crisis, it is the way these new powers are encouraged and channeled by adults that determines how the crisis will be resolved. If mobility and exploration are encouraged, if the child's budding powers are met by appropriate challenges, then autonomy will emerge in the ascendance over shame and doubt. On the other hand, if adults are impatient or mete out severe punishment for small misdemeanors, or when there is no perceived consistency between the child's behavior and adult reactions, then the sense of autonomy is blunted, and feelings of shame and doubt become pervasive. As previously noted, Erikson does not view complete absence of the negative pole as the ultimate desideratum. An individual who is incapable of shame or self-doubt is as ill-equipped to function in society as one who has a weak sense of autonomy.

The social dimension that appears at the third stage is that of initiative vs. guilt. In classical theory, this is the period of the Oedipal struggle followed by identification with the like-sexed parent. In Eriksonian terms, "being firmly convinced that he is a person, the child must now find out what kind of a person he is going to be" (p.74). He identifies with his parents and fantasizes what it would be like to be them. Here he is helped by his increased mobility, his rapidly developing facility with language, and his power to use symbols to replace objects. Now that he is fully at ease in the use of these combined powers and achievements, he can use his abundant energy to give free rein to his imagination, which now knows no bounds. He is able to move independently and vigorously, and can begin to conceive of himself as having the same powers and privileges as adults. The danger is that these wild speculations can be frightening, carrying as they do the potential for danger and parental retribution. There emerges in response to these threats what Erikson calls "the great governor of initiative," namely conscience. Again, the danger is that adults who inhibit their child's sense of initiative by proscribing or limiting activity or by turning aside his intellectual explorations, may promote the growth of conscience over the sense of initiative.

Freud's belief that the personality formation is accomplished through socialization of the sexual instincts led him to view the years of middle childhood as a period of latency in which little of interest to a psychologist is taking place. By contrast, Erikson sees the age of 6 to 11 years as extremely important, a period in which the child is exposed for the first time to social institutions other than the family. The developmental task of this period is to learn the tools of the culture. In western societies schools are entrusted with the business of ensuring that all children are appropriately equipped to contribute to their society and to profit from the good life it provides in return. In turn, the child, if he has been successful at earlier stages, musters all his energies and enthusiasm to learn these basic skills and to meet the expectations of the society in so doing.

There is a preoccupation at his age with constructing things and doing things, often in cooperation with peers. Indeed, the peer culture assumes new importance as the significance of team work and rules becomes apparent to the child. The essence of this period is the industry, the drive with which projects are approached. If nurtured through constructive challenges, this sense of industry will form the basis for lifelong patterns of work. If, however, the elementary school is a joyless place where the work imposed seems irrelevant to the child's own purposes, where learning the tools becomes a drudgery instead of a pleasure, there is the chance that academic activities will come to have a negative connotation that will spill over into later attitudes to work in general. Although Erikson calls the converse of industry "inferiority," the ramifications of unsuccessful passage of this stage would seem to extend beyond the usual meanings of this word. True, the child who experiences repeated academic failure may come to have a deep and abiding sense of inferiority. But even the child who is capable of learning what he is supposed to learn during this period may, if the climate of the classroom promotes such feelings, leave the elementary school with a strong distaste for school work and negative attitudes toward persons in authority that will be counterproductive in the workplace.

The period of adolescence, extending from 12 to 18 years, is of especial interest in Erikson's schema. In Freudian theory, adolescence saw the reawakening of the sexual interest, this time in relation not to the opposite sex parent but to a partner of one's own age. For Erikson, this is only a part of the nexus of complex, interrelated problems that constitutes adolescence, and all these problems have to do with the young person's emerging sense of identity. However, the sense of identity is now multidimensional. It embraces physical identity, for with the rapid growth and maturation of his sexual prowess, the youth must wrestle with his concept of himself as a physical entity, tall or short, strong or weak, handsome or plain: in short, he must develop a realistic body image. He must also assess his self-worth and his capabilities with respect to the opposite sex. His newly found powers of deductive reasoning and his passage into the world of high school open up vast horizons of knowledge and a multitude of possible ways of thinking about and reacting to the world. His imagination is now limitless. He can conceive of families and societies vastly different from his own, and is often impatient with what he perceives as apathy and hostility in the face of monumental social problems. An important aspect of identity at this stage relates to the young person's idealism and sense of civic responsibility, and his decisions as to the ways in which he meets this responsbility in terms of his own career and life style.

He engages in endless discussion with his peers on some of the vital issues posed by his own internal struggles and the intransigeance of the people around him. How well these problems are resolved will depend not only on whether he has attained a strong sense of autonomy, initiative, and industry during the earlier stages, but on the nature of the social milieu in which these problems are being worked out. It is clear that, in some sense, a sheltered environment may lead to an apparently easy resolution of the identity crisis, but this may be deceptive. The problem

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may simply reappear with greater severity, and at a more inappropriate time in terms of the person's career. For example, a boy whose father evinces strong desire for his son to enter a specific occupation and to follow in his footsteps may find the boy compliant, and yet the son may later feel resentful that he was not given the opportunity to explore other alternatives, and may end up pursuing some completely different (and, in his father's view, inappropriate) line of work.

So many threads are brought together and intertwined to form the budding sense of identity, that it is hardly surprising that the adolescent finds difficulty in resolving each of these crises and of striking a balance among them. When societal roles are vague or poorly structured or are undergoing profound change, the problem is likely to be compounded. The result may be what Erikson calls role diffusion, that is to say, rather than becoming increasingly crystallized, the roles become more and more diffuse and ill-defined. The adolescent moves rapidly from one role to another, without fixating or finding pleasure in any single one. In the case study of Joseph Kidd, Robert White describes a "person without a personality" who, during his college career, tried out many different "masks," only to find himself increasingly frustrated when none of them worked. Only through intensive counseling and a complete change in career plans was he able to achieve a consistent personality that matched his capabilities and objectives. Erikson himself has documented a case of severe identity diffusion in the psychohistorical study of Martin Luther. The case study method used by Erikson and other authors seems particularly suitable for exploring the dimensions of both the crisis and its implications for later personality development and subsequent achievement, but there is not a wealth of such studies, presumably because, illuminating as they may be, they are time-consuming to conduct and incapable of generalization beyond the particular case.

The crisis of identity vs. identity diffusion is pervasive in American society. As Erikson notes, our insistence on self-made identities, the simultaneous presentation of ideals and traditions on the one hand and disillusionment and egocentrism on the other make it difficult for adolescents who are not yet sure of what they are or what they are going to be, and are trying to "get it all together " to make these important life decisions, or having made them, to stick with them. A danger is that they will be content to accept the shadow for the substance, to espouse as their ideal models those who are actually phony representatives of a system they have perverted to their own ends. To quote Erikson "In order not to become cynically or apathetically lost, young people in search of an identity must somewhere be able to convince themselves that those who succeed there by shoulder the obligations of being the best, that is, of personifying the nation's ideals. In this country, as in any other, we have those successful types who become the cynical representatives of the "inside track", the "bosses" of impersonal machinery. In a culture once pervaded with the ideal of the self-made man, a special danger ensues from the idea of a synthetic personality, as if you are what you can appear to be, or as if you are what you can buy. This can be counteracted only by a system of education that transmits values and goals which determinedly aspire beyond mere "functioning" and "making the grade" (p.94).

As with earlier stages, the crisis of establishing identity while retaining the flexibility to diffuse or switch roles (which is so necessary in a changing society) lays the foundation for the next stage, that of early adulthood. Only when a reasonable sense of identity has been established is real intimacy with the other sex, or with other persons, possible. The youth who is unsure of his identity shies away from interpersonal intimacy either by isolating himself or by seeking love and fellowship in repeated attempts and repeated failures. Unfortunately, many young people, feeling that the privileges of adulthood have been postponed long enough, become frustrated under these circumstances and embark on marriage or other forms of intimacy which, in effect, are only a semblance of the real thing. The premature obligation to act in a defined way as mates and parents adds a further strain to the unresolved task of establishing one's own identity.

These five stages covering the period from birth to young adulthood comprise that portion of Erikson's theory that has particular relevance for this discussion. The period of adolescence has direct application to the present purpose, but the epigenetic nature of the theory suggests that prior stages must also be considered in attempting to determine the problems encountered by an individual or special group such as deaf youth.

Havighurst's Developmental Task Theory

Havighurst's theory, like those of Erikson and Piaget, is built around the concept of stages of development and its corollary, the concept of developmental task. Havighurst divided the lifespan into six stages: (1) infancy and early childhood, (2) middle childhood, (3) adolescence, (4) early adulthood, (5) middle age, and (6) late maturity.

Developmental Tasks and Education

In the third edition of his book (1972) Havighurst described a series of 8 tasks peculiar to adolescence:

1. Forming new and more mature relations with agemates of both sexes
2. Achieving a masculine or feminine social role
3. Accepting one's physique and using the body effectively
4. Achieving emotional independence from parents and other adults
5. Preparing for marriage and family life
6. Selecting and preparing for an occupation
7. Acquiring a set of ethics as a guide to behavior
8. Developing a social intelligence necessary for civic competence

1. Forming new and more mature relations with agemates of both sexes - Preadolescence is marked by the self-imposed segregation of the sexes in most of their leisure-time activities. Close personal friendships with a member of the same sex are the rule, while the opposite sex is either ignored or treated with disdain. The accelerated physical development of girls at this stage aggravates this situation. The security of the group setting enables its members to enter gradually into limited heterosexual relationships, so that by high school almost all boys and girls are socializing with the opposite sex in couples or groups. These interactions provide the requisite experiences for learning the appropriate sexual role.

2. Achieving a masculine or feminine social role - Though the past decade has seen considerable changes in the definition of sex roles, achievement of such a role still represents an important item of learning for most adolescents.

3. Accepting one's physique and using the body effectively - This may be an especially troublesome task for the adolescent, whose preoccupation with real or fancied imperfections makes it difficult to "become proud, or at least tolerant, of one's body." The problems of adjusting to rapid growth spurts and increased sexual drive, and the need to impress one's peers with feats of bravado may make it equally impossible to "use and protect one's body effectively and with personal satisfaction. Many lifelong problems stem from the failure to achieve this developmental task.

4. Achieving emotional independence from parents and other adults - American society sets great store by independence, yet places many obstacles in the path to its achievement, among which prolonged adolescent is perhaps the most influential. Though physically mature, the adolescent must

rely on parents for food, shelter and clothing, and for money to purchase goods and entertainment. Whether they wish to or not, adolescents must continue to attend school for many years. For some these restrictions are offset by finding a part-time job, but even where available, this is typically regarded as a temporary solution. For their part, the parents are often ambivalent about severing the childhood ties and dubious about the adolescent's ability to make mature decisions and to engage in responsible behavior.

5. Preparing for marriage and family life - As the adolescent becomes more active socially with members of the opposite sex, the need to conform to parental and societal expectations must be faced. Attitudes toward, and decisions about, marriage and parenthood are consolidated. The choice of a suitable marriage partner assumes major significance.

6. Selecting and preparing for an occupation - Modern society offers a broad choice of occupations, many of which require high levels of advanced training. The huge investments of time and money entailed in preparing to work in certain fields makes the initial selection a matter of no small consequence to the individual and the society that provides the training and financial support. Choice of an occupation involves matching personal aptitudes and preferences with the requirements of various jobs, many of which are poorly understood, even mysterious. It is not uncommon to find adolescents holding highly fantasized or distorted notions about the prestige or financial reward attached to a position or about the responsibilities that accompany it. As Super ( ) has pointed out, choice of occupation requires both realistic self-concept and the dimensions of the occupation under consideration.

7. Acquiring a set of ethics as a guide to behavior - Every society has prescribed codes that place legal and social restrictions on individual behavior. Beyond these, however, the cultural pluralism of American society allows for a broad range of values, attitudes, and life styles. Exposure to these diverse life styles through mass media and the frequent clash of value systems between generations or different segments of the population have heightened awareness among young people to the possibility of choice. Ethical behavior is also a function of the level of moral development attained (Kohlberg, 1969)

8. Developing a social intelligence - Many social concepts such as justice, freedom, and democracy, are highly abstract, and are not fully learned until adolescence. Even when a principle is clearly understood, it may conflict with another principle, and there is no simple resolution to many complex problems that stem from this conflict. Controversy abounds in a complex, pluralistic society, often reaching emotional levels, or even violence. The adolescent must chart a course through a sea of rhetoric, must learn to withstand arguments that appeal more to emotion than to logic, and to tolerate the ambiguity that accomanies problems that seem imponderable. Coping with dissension and turmoil, while remaining socially engaged in carrying one's civic responsibilities, is a major hurdle in the passage toward adulthood.

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Kohlberg's Moral Development Theory

Piaget's theory of cognitive development is comprehensive in scope; it applies to intellectual growth across all disciplines and embraces concepts that are basic to all areas of inquiry, such as space and time, cause and effect, logical relationships, probability, number, etc., concepts which are as applicable to the social sciences and humanities as the physical sciences. One area that attracted Piaget's attention early in his career was that of moral development in children. As in his other naturalistic studies, he observed children of different ages at play, asking questions that would clarify their concepts of rules, justice, and fair play, and probing their responses for elaboration. The all-pervasive characteristics of egocentrism and absolutism seen in other spheres also pervade the moral realm. The attributes of children's moral development according to Piaget are these:

1. Young children assess the severity of a transgression according to its consequences, whereas older children become more aware of intent also.

2. Punishment is viewed as inherent in the act itself --- justice is "immanent" -- according to young children. Older children come to the realization that punishment evolves from human principles that determine its appropriateness to the crime.

3. Distributive justice also appears in young children's thinking. External retribution follows inexorably in direct proportion to the enormity of the crime. Older children are more sensitive to mitigating circumstances or the possibility of restitution on the part of the transgressor.

4. Rules are absolute and inviolable in the mind of the young child, whereas older children perceive the relative nature of rules and the fact that they can be changed by mutual agreement.

Kohlberg (1971) has recast and extended Piaget's formulations into the following stages:

I. Preconventional Level

At this level the child is responsive to cultural rules and labels of good and bad, right or wrong, but interprets these labels in terms of either the physical or hedonistic consequences of action, (punishment, reward, exchange of favors) or in terms of the physical power of those who enunciate the rules and labels. The level is divided in the following two stages:

Stage 1 (7 - 9 years) - The Punishment and Obedience Orientation. The physical consequences of action determine its goodness or badness regardless of the human meaning or value of these consequence Avoidance of punishment and unquestioning deference to power are valued in their own right, not in terms of respect for an underlying moral order supported by punishment and authority (the latter being stage 4).

Stage 2 (9 - 11 years) - The Instrumental Relativist Orientation. Right action consists of that which instrumentally satisfies one's own needs and occasionally the needs of others. Human relations are viewed in terms like those of the marketplace. Elements of fairness, of reciprocity, and equal sharing are present, but they are always interpreted in a physical, pragmatic way. Reciprocity is a matter of "you scratch my back and I'll scratch yours," not of loyalty, gratitude, or justice.

II. Conventional Level

At this level, maintaining the expectations of the individual's family, group, or nation is perceived as valuable in its own right, regardless of immediate and obvious consequences. The attitude is not only one of conformity to personal expectations and social order, but of loyalty to it, of actively maintaining, supporting, and justifying the order and of identifying with the persons or group involved in it. At this level, there are the following two stages:

Stage 3 - The Interpersonal Concordance or "Good Boy-Nice Girl" Orientation. Good behavior is that which pleases or helps others and is approved by them. There is much conformity to stereotypical images of what is majority or "natural" behavior. Behavior is frequently judged by intention - "he means well" becomes important for the first time. One earns approval by being "nice."

Stage 4 - The "Law-and-Order" Orientation. There is orientation toward authority, fixed rules, and the maintenance of the social order. Right behavior consists of doing one's duty, showing respect for authority, and maintaining the given social order for its own sake.

III. Postconventional, Autonomous, or Principled Level

At this level, there is a clear effort to define moral values and principles which have validity and application apart from the authority of the groups or persons holding these principles and apart from the individual's own identification with these groups. This level again has two stages:

Stage 5 - The Social-Contract Legalistic Orientation. This level generally has utilitarian overtones. Right action tends to be defined in terms of general individual rights and in terms of standards which have been critically examined and agreed upon by the whole society. There is a clear awareness of the relativism of personal values and opinions and a corresponding emphasis upon procedural rules for reaching consensus. Aside from what is constitutionally and democratically agreed upon, the right is a matter of personal "values" and "opinion." The result is an emphasis upon the "legal point of view," but with an emphasis upon the possibility of changing law in terms of rational considerations of social utility (rather than freezing it in terms of stage 4, "law and order"). Outside the legal realm, free agreement and

contract is the binding element of obligation. This is the "official" morality of the American government and constitution.

> Stage 6 - The Universal Ethical Principle Orientation. Right is defined by the decision of conscience in accord with self-chosen ethical principles appealing to logical comprehensiveness, universality, and consistency. These principles are abstract and ethical (the Golden Rule, the categorical imperative); they are not concrete moral rules like the Ten Commandments. At heart, these are universal principles of justice, of the reciprocity and equality of human rights, and of respect for the dignity of human beings as individual persons.

Like Piaget, Kohlberg believes that each of his moral stages is prerequisite to all successive stages. Both parental guidance and the socializing influcence of peers are important factors in moral development.

Kohlberg's description of moral stages has stimulated a great deal of discussion and considerable research. Among the questions raised are (1) the relationship of moral judgment to actual behavior (Fodor, 1973; Saltzstein, Diamond and Belenky, 1971), and the educability of moral judgment (Turiel and Rothman, 1972).

In a discursive article on Kohlberg's stages of moral development, Gibbs (1978) has stated that the first four stages, which he calls "orientations," satisfy five criteria of developmental stage sequences in the Piagetian sense, viz.

(1) Generality or consistency and a correspondence to analogous structural stages in other domains of development.

(2) A natural upward tendency with resistance to extinction or regression.

(3) Facilitated rates of stage development for subjects in an experientially enriched environment.

(4) Gradual and consecutive upward movement through the stage sequence.

(5) Commonly in evidence among members of the species from birth to maturity. (p.37)

The fifth and sixth stages, on the other hand, Gibbs argues, are not stages in the same sense, but "post-conventional," reflecting the emergence of ethical sentiments that may precipitate an "existential crisis" at any time during adolescence or adulthood. This highest level of morality "entails role-taking the claim of each actor (in a moral conflict) under the assumption that all other actors' claims are also governed by the Golden Rule and accommodated accordingly.....(Hence) valid ethical decisions require the perspective of an 'impartial spectator' or 'ideal observer'" (p.45). In fact, the "principled orientations" are formal ethical philosophies rather than natural stages of moral judgment.

Gilligan (1978) has identified another problem with Kohlberg's theory - "the problem of women." The problem is that "the qualities deemed necessary

for adulthood -- the capacity for autonomous thinking, clear decision making, and responsible action -- are those associated with masculinity but considered undesirable as attributes of the feminine self" (p.53). Gilligan concludes that developmental theories that find women's development aberrant or incomplete are one-sided, stressing autonomous judgment and action at the expense of the universal need for care and compassion. "The observation that for women, identity has as much to do with connection as with separation (also) led Erikson into trouble largely because of his failure to integrate this insight into the mainstream of his developmental theory" (p.80).

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Chomsky's Theory of Transformational Grammar

Syntax is that part of grammar that has traditionally received most attention from grammarians. The beginning of the study of children's syntactic structures go back to Rousseau, and traces of modern theories of generative grammar may be found in the works of German writers such as Freyer and Stern in the nineteenth century.

Chomsky proposes a theory of syntax with far-reaching implications for the behavioral sciences. His transformational theory is built on a number of philosophical assumptions, most notably the notion of innate structures of the mind. (In this respect, Chomsky is in the direct tradition of rationalist philosophers going back to Plato.) In language these universals are manifested in the grammatical form of sentences. They reflect an underlying, biologically based structure which is shared by all members of the species. These structures predetermine the sequence and timing of linguistic development in the young child, which are the same, regardless of the language and culture to which the child is exposed.

Chomsky (1968) has described the process of language acquisition as a "kind of theory construction" in which "the child discovers the theory of his language with only small amounts of data from that language" (p. 284). This "theory of language" is predictive; that is, the child responds to the linguistic data that he receives so as to form generalizations about language which are reflected in his speech. Chomsky emphasizes that the process is much more than pure imitation, as may be seen from the child's production of novel sentences. The child's activity is dependent on innate restrictions on the form of grammar. Chomsky (1968) states that: "The restriction on the form of grammar is a precondition for linguistic experience, and it is surely the critical factor in determining the course and result of language learning" (p. 284). The fact that children can communicate meaning, the most abstract part of language, before they have acquired the grammar seems to call for some explanation. Chomsky introduces the concept of a Language Acquisition Device, or LAD, which takes the body of speech utterances to which the child is exposed and somehow constructs from it a grammatical theory.

Thus, the child uses the language universals which he possesses at birth to construct an internal picture of the syntactic structures of his language. He learns the ideal theory, that is to say, he approximates an ideal speaker-listener who has perfect knowledge of the language and who

carries around in his head a set of generative rules which constitute the transformational stage, the central factor in the tripartite structure of the grammar. The tripartite structure includes deep structure, transformational rules, and surface structure. The deep structure of a language defines, through transformational rules, the meaning and interpretation of a language. It is abstract, and is not represented in speech. Furthermore, as Chomsky (1968) writes:

> The rules that determine deep and surface structure and their interrelation in particular cases must themselves be highly abstract. They are surely remote from consciousness and cannot be brought to consciousness (p. 283).

The precise nature of the interaction with the linguistic environment that is necessary for the child to construct this ideal theory and learn the rewrite rules is unclear, as is the degree of "activity", mental or otherwise, that is called for.

> We must also bear in mind that the child constructs this ideal theory without specific instructions, that he acquires the knowledge at a time when he is not capable of complex intellectual achievements in many other domains, and that this achievement is relatively independent of intelligence or the particular course of experience (Chomsky, 1968, p. 284).

Perhaps Chomsky is a little clearer about what language acquisition is not. It is <u>not</u> a process of imitation, generalization, and reinforcement, key concepts of the behaviorist theory. There is ample empirical evidence to dismiss a probabilistic account of language. With respect to <u>imitation</u> it may be noted that: (a) children's ability to reproduce sentences they hear is limited to what they can produce in spontaneous speech (Ervin, 1964); (b) the order in which inflections appear in children's speech is weakly correlated with the frequency of these forms in the speech of the adults they hear (Bellugi, 1964); (c) when children fail to comprehend a sentence they are asked to imitate, the imitation either expresses a different meaning or no meaning at all (Slobin and Welch, 1967); (d) since children reconstruct adult models to make their own grammars, imitation plays no role in the acquisition of new transformations (McNeill, 1970); (e) children often produce regular forms of irregular verbs (e.g. digged) even though they have never heard these forms in adult

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speech (Ervin, 1964); (f) children omit certain aspects of the model's utterance, e.g. his gruffness of voice; and (g) a child can pick up a second language from other children who are not precise or accurate in their speech (Chomsky, 1959). The concept of generalization has also been the object of some criticism. For example, the way very young children classify words into pivot or open class is more consistent with subtle differentiations they will make in the future than with generalizations from past experience. McNeill (1970), for example, cites the case of a child whose pivot class contained members of several adult grammatical classes (demonstratives, adjectives, possessives, etc.), although none of these classes were at that time a part of the child's grammar.

As for reinforcement, the concept plays no part in psycholinguistic models. External reinforcement is unnecessary to explain any part of language acquisition. The child is propelled into learning his native language by the inescapable fact of being human; his biological endowment of innate linguistic structures allows of no other outcome. In the context of his inexorable progress toward becoming the ideal user of his language, reinforcement seems a pale and insignificant factor.

These criticisms, while not all equally telling, in toto seem to present a compelling argument against Skinner's version of language learning. Automatic acceptance of the statement that the kind and amount of language exposure the young child enjoys is irrelevant does not necessarily follow, however. In fact, much heated discussion among Chomsky's followers has ensued around the topic of genetic determination. While agreeing that some significant innate component in language acquisition is necessary if we are to "build a viable developmental psycholinguistics," Slobin (1966) takes issue with McNeill on "how to determine just what sort of things should be considered "preprogrammed" and to what extent a human child is "wired up" with linguistic competence.

> It seems to me that the child is born not with a set of linguistic categories but with some sort of process mechanism--a set of procedures and inference rules, if you will--that he uses to process linguistic data. These mechanisms are such that, applying them to the input data, the child ends up with something which is a member of the class of human languages. The linguistic universals, then, are the result of an innate cognitive competence rather than the content of such a competence. The universals may thus be a derivative consequence of, say, the application of certain inference rules

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> rather than constitute the actual initial information in terms of which the child processes linguistic input (Slobin, 1966, p. 87-88).

Such misgivings have led to substantial revisions of the original transformational theory, making way for a new direction, in which the preoccupation with syntax has given way to an enlarged interest in the semantic aspects of linguistic communication, and the cognitive basis of language learning has come under closer scrutiny (Macnamara, 1970). Some authors would go so far to say that "the Chomskyian revolution is over" (Wolfram, 1975).

Another argument that was seen as bolstering the need to postulate an innate mechanism was the rapidity with which children acquire language in the early years, a phenomenon which could not occur, it was maintained, if language followed the same course as other types of learning that depend primarily on experience. The fact that virtually all the syntactic constructions found in adult speech are found in the speech of a normal six-year-old was pivotal to the thesis. However, the past decade has seen the emergence of a number of articles and studies to suggest that the development of syntax is a much more protracted process than was assumed by the theory of transformational grammar, and that experience does play a role in its acquisition after all. In fact, there seems to be a hierarchy of difficulty for processing certain types of syntactic structure, which follows the kind of sequence we find in other types of learning, e.g. from the simple to the complex, from the familiar to the unfamiliar, from the concrete to the abstract, from the positive to the negative instance. All this we find in concept learning, problem solving, and other forms of higher mental activity. This evidence has been compiled elsewhere (Athey, 1977) and will only be summarized here. In brief, the studies cited may be said to demonstrate that:

1. Even the simplest constructions have many uses, and some of these are more difficult than others. The conjunction <u>and</u>, for example, may signify the joining of similar elements (e.g. bright and shiny), temporal sequence (e.g. he bathed and dressed), comparative degree (e.g. longer and longer), opposition (e.g. war and peace), social convention (e.g. he offered and I accepted) and causality (e.g. fight and die), among others. These uses are not explicitly taught, yet must be learned; such learning is still taking place in adolescence (Hutson and Shub, 1974).

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2. Other conjunctions (when, so, but, or, where, while, that, and if) are very difficult, and intelligence is highly related to their comprehension (Stoodt, 1972).

3. Negatives introduce yet another dimension of difficu (Neimark and Slotnick, 1970; Katz and Brent, 1968).

4. Syntactic errors arise where there is a suppressed noun phrase or verb phrase which the reader or liste must generate if he is to understand the meaning of the sentence, as in "The doll is easy to see" (C. Chomsky, 1972).

5. Children who understand separate words or symbols sometimes have difficulty integrating them into a meaningful message (Denner, 1970).

6. Many words in our lexicon, despite appearances to the contrary, are really relational, e.g. tall means relative to some standard (Donaldson and Wales, 1970 and relationships, comparisons, etc. imply additiona difficulty.

7. The child's understanding of language is closely related to his understanding of events around him and of social conventions such as use of context, inflection, and concomitant action to infer meaning (Wolfram, 1975).

This research has led us to question the use of transformational grammar as a basis for a theory of developmental psycholinguistics. Pearson (1974-75) conducted a series of experiments to test counter hypotheses derived from the deep structure model and the chunking model, and found that the results systematically favored the latter. Basically, this means that the hypothetical memory storage units are large components such as complete sentences, rather than atomistic deep structure components such as "tall man" and "short girl" which must be synthesized if comprehension is to occur. Bransford and Franks (1971) demonstrated the superiority of the chunking explanation with adult subjects, thereby emphasizing the primacy of semantic over syntactic factors in fluent readers. On the other hand, the deep structure model may be more appropriate where the message to be understood is so difficult that it can only be understood in small segments

Language acquisition in the deaf child

The hypothesis of linguistic universals implies that dea children are born with the same innate structures and capabilities for language learning as other infants. Whatever form

communication the child may be exposed to, the same deep structure will contain both the "kernel sentences" of discourse and the rewrite rules that permit translation from deep to surface structure, no matter what form that surface structure may take. Deaf children, on this hypothesis, are fully capable of learning a complete language with its own syntactic constructions. The fact that in Chomsky's theory, grammar is independent of meaning,* would be to the advantage of the deaf child, because he is equipped with the same innate structures for learning the grammar as other children. There is no theoretical reason, on this model, why he should not have the same full-blown language system by the age of six as his hearing counterparts, even though the syntax of sign language may be less well developed or differentiated than the syntax of English. Differences between deaf and hearing subjects would then be primarily a funciton of vocabulary.

Studies investigating deaf students' learning of syntax, such as those of Quigley (1977) and others, have concentrated on English syntax. In general, the finding is that deaf students follow the same order of acquisition of syntactic structures as hearing students, but that there is a time lag and, in many cases, a ceiling to their learning. Whether this is equally true of the syntax of sign language, however, has not been studied.

Linguists since Chomsky are less sure that meaning can be separated from grammar. Evidence is accumulating to suggest that considerable meaning is derived from syntax. Syntax helps the listener comprehend because his understanding of sentence structure helps him to narrow down the possibilities of what is to follow in subsequent parts of the discourse. Moreover, as Carol Chomsky has demonstrated, the meanings are not always overt; sentences with identical surface structures may have entirely different meanings because a different clause is suppressed in the two cases. Undoubtedly, cases like these, that are hard to explain except in technical jargon, and indeed rarely are explained to children, must be exceptionally difficult for the deaf child to grasp.

We have already noted that the process of learning English syntax is a much more protracted affair than was formerly supposed. Hutson, Bormuth, and others have shown that comprehension of some of these structures is still incomplete at adolescence. Since Quigley's studies have shown deaf children lagging behind their hearing counterparts we can only conclude that many deaf students are still struggling with

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* (Hence we may have a perfectly grammatical sentence such as "Colorful green ideas sleep furiously" which is meaningless.")

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them in adulthood, or alternatively, never learn them at all. At all events, it seems reasonable to conclude that instructors and counselors who deal with deaf adolescents, cannot assume the same mastery of language, or the same degree of comprehension of spoken and written material that they expect in hearing youth.

As previously noted, when it comes to describing the precise nature of language learning, the theoretical formulations of the linguists are vague. McNeill, for example, felt a strong need to posit innate linguistic properties to account for the remarkable rapidity of language acquisition, but he seems to feel that this is all that needs to be posited. Fraser (1966) has retorted that the "astonishing speed" of language acquisition is less astonishing when we consider that the child is working constantly on acquiring language from the birth to the age of six or beyond. The "mere exposure" which McNeill discounts as the medium for learning actually brings the child into relational communication with adults and other children. Fraser also suggests that instead of arguing about the nature of innate capacities, we should get on with the job of discovering what precisely the language behavior is that the innate capacities and mechanisms are supposed to be explaining, and we might add, what are the effects of different kinds of exposure on different facets of language learning. In particular, we need to understand more about the correspondence between the syntactic structures of sign language and English, and to determine the degree of continuity or discontinuity between them.

Another limitation of Chomsky's theory, from the perspective of developmental psycholinguistics, is its complete neglect or lack of explanation as to how meanings are acquired. To be sure, Chomsky called his theory a "theory of syntax," implying that it did not extend beyond syntax. But we have become more aware in recent years of the interrelatedness of syntax and semantics, and any account of language development that failed to include words and sentences, even comprehension of the structure of paragraphs and stories, would today be considered incomplete. This is not the place to consider the implications of schema theory for language and reading in the deaf, but they must assuredly be profound.

Lenneberg's Biological Theory

Lenneberg (1967) presents a theory based on the premise that language has a biological basis and is the manifestation of species-specific cognitive propensities. "A biological predisposition for the development of language is anchored in the operative characteristics of the human brain." Thus, language is a peculiarly human function to which animal communication shows no evidence of approximation. Work by Thorpe (1967), Hockett and Altman, 1968), Gardner and Gardner (1969) and Premack (1971), which argues for a continuity hypothesis between animal and human language, might pose a challenge to Lenneberg's position, and the evidence at this point appears inconclusive.

The resemblance between Lenneberg's theory and that of Chomsky is obvious. However, Lenneberg, unlike Chomsky, presents a vast array of evidence from genetic, neurological, and psychological sources. First, language appears to be closely tied to general maturation. Important milestones in language acquisition are reached in a fixed sequence which cannot be accelerated by special training and are largely unaffected by such variables as intelligence, parental attitudes, or effectiveness in communication. Maturation of the latent language structures brings about a state of readiness, at which time adult speech elicits a "resonance" which releases the synthesizing process by which the child builds his own language structure. Hence, there is a critical period for language acquisition (2 to 4 years) corresponding to certain aspects of brain development. At adolescence, there occurs "the phenomenon of cerebral lateralization of function" at about the same time that the capacity for primary language acquisition declines. Cross-cultural research studies reveal the same sequence of linguistic events.

As further evidence of the innate biological basis of language, Lenneberg points to the universal properties of language: (a) all languages have a phonemic system; (b) all are concerned with the same aspects of the environment; (c) all languages can be judged as either grammatically acceptable or unacceptable; and (d) the syntax of languages is basically of the same type, consisting of words or morphemes that fit into functional categories. Language universals are determined by the limitations set by the cognitive functions characteristic of man. Concept formation is primary; applying linguistic terms to the categories is a secondary process. Maturation of cognitive processes comes about through progressive differentiation of experience, a traversing of highly unstable states whose disequilibrium leads to rearrangement of the elements of thought, adult thought being characterized

by relatively stable arrangements. The period of disequilibrium of language is of limited duration, however; it begins around two years of age and declines with cerebral maturation in the early teens.

As previously noted, Lenneberg's theory is founded on a wealth of evidence from diverse sources, including observational studies of orphanage children, field research in central Brazil, New Guinea, and the American southwest, and a large number of clinical case studies of (a) aphasia due to brain trauma, and (b) deaf children.

It is also apparent that linguistic development follows the same sequence of stages regardless of the language to which the child is exposed. For example, McNeill (1966) found that both English and Japanese children master a generative transformational grammar according to certain universal principles. Ervin-Tripp and Slobin (1966) reported that the earliest grammar both in Russian and English appears before two years of age. In a further review, Slobin (1964) cited cross-cultural research on early stages of the acquisition of grammar as indicative of the universality of the stages and the process. Cazden (1969) has noted that studies of early language acquisitions do in fact show striking similarities in the stages of development across children, with equally striking deviations from adult grammar. Ervin and Miller (1963) observed that children acquire prelinguistic articulatory control by the age of 8-10 months, the onset of one- and two-word utterances between the ages of 1 to 2 years, and the use of plurals before age 3. Braine (1963) reported that 5 or 6 months after one-word utterances are established, children show an upsurge of different word combinations used in two-word utterances. (The number of <u>different</u> combinations recorded from one of Braine's children in successive months was: 14, 24, 54, 89, 350, 1400, 2500+ [McNeill, 1970].) Bellugi (1965) found a sequence of three stages between 18 and 36 months in the development of the interrogative. Ervin-Tripp (1970) also noted a fixed sequence in which responses to various types of questions were learned between the ages of 2.6 and 4.2 years. She further reports use of the past tense and the notion of intention as appearing between the ages of 3 and 4 years. McCarthy (1954, p. 526) observed the use of phrases and compound sentences after 2 years, and the use of clauses by 4½ years. Anderson and Beh (1968) concluded that lexical markers are learned hierarchically during the first and second grades of school. A study by Eimas, Siqueland, Jusczyk, and Vigorito (1971) showed that 1- and 4-month-old infants can discriminate consonant sounds in much the same way as adults. The peak of discriminability was found at the boundary between voiced and voiceless stops. Carlson and Anisfeld (1969) concluded

from a longitudinal study of the development of a child's speech from the ages of 21 to 33 months that the child had an internal longuistic system and had acquired the patterns and sound relations inherent in English before he had mastered the specific sounds.

To show that language milestones are reached independent of environmental factors, Lenneberg (1967) points out that up to the age of 6 months, deaf babies and hearing babies born to deaf parents go through the same sequence of vocalizations as hearing children. Ervin and Miller (1963) also report that deaf children during the prelingual period (0-3 months) make the same sounds as hearing children. Lenneberg (1962) reported a case history of a child who was never able to speak, but who at age eight was capable of understanding complex syntactic structures.

Mothers' attitudes toward their children are not predictive, according to Lenneberg (1967), of the emergence of various stages in speech development. Children in orphanages are often below average in speech development at 3, but have caught up by the age of 6 or 7, when the environment is enriched, providing the resonance necessary to trigger the child's latent language structure is present. Brown, Cazden, and Bellugi (1968) in their observations of parental utterances, found no evidence of the effect of reinforcement or communication effectiveness of parents on the appearance of milestones in language development.

To show that language is also relatively independent of intelligence, Lenneberg (1964b) draws on his studies of retarded children. Children with IQ's ranging around 50 all possessed language, though articulation and grammar were poor, and continued to develop until the early teens, when language development "freezes." Lenneberg, Nichols, and Rosenberger (1964) studied 54 Mongoloids ranging in age from 6 months to 22 years over a 3-year period, and found that 75 percent reached at least the first stage of language development, although no subjects over 14 made any progress at all.

The evidence above may be summarized by the statement that language development is a function of the growth of the human brain. Hence, the maturation of language parallels the maturation of motor skills and cognitive processes in general. Other authors have described the acquisition of language structures in terms reminiscent of accounts of concept formation. Glanzer (1962), for example, describes the development of grammar as a tentative theory which the child must validate by testing. Brown and Fraser (1964) concluded that the child constructs his grammar by imitating adult speech

in reduced form and inducing general rules, and they discuss the evidence of induced rules presented by the overgeneraliz. tions children make which lead to errors (see also Cazden, 1968). Rearrangement of this stable generalization produces further differentiation.

The publication of Lenneberg's book Biological Foundations of Language has been hailed as "the event of recent years" in this area (Fillenbaum, 1971). Carroll (1968) evaluates it as "an extraordinarily careful review and interpretive discussion of what is known of the biological substrate of language" (p. 117). Bem and Bem (1968, p. 499) find that "in sum, Lenneberg's presentation is persuasive, and the weaker spots . . . do not impair the thrust of his major thesis."

Maturation. According to Carroll (1968), Lenneberg has added new evidence to that of Gesell, McCarthy, and others to show that language development is maturationally dependent. However, he questions the corollary of this position, that there is a critical period for language learning.

> The notion of a biologically determined lower age limit for first language acquisition would, I think, be accepted by all but the most extreme behaviorist. The evidence for a biologically determined upper age limit... is not so clear. It rests primarily on observations of the poor prognosis for language learning in the unharmed hemisphere in aphasics beyond puberty. A counter-theory would be that the apparent loss of cerebral flexibility is due solely to the accumulation of well-formed habits that interfere with efforts to establish new habits of foreign pronunciation...or to learn any new skill (p. 118).

Biological basis of language. The evidence for the existence of linguistic universals is overwhelming but, Carroll warns, we must exercise caution in inferring that these are biologically dependent. There are universal features of other human systems which may depend more on logic or on "the nature of things" than on biologically given capacities. As one universal feature, Lenneberg cites the fact that "all languages are concerned with essentially similar aspects of the environment," a tacit admission, in Carroll's view, that "some universal characteristics of language may arise from characteristics of the human environment rather than the human organism" (p. 118). Bem and Bem (1968) point out that

> it is not biological considerations which are prompting an increasing number of psychologists to accept some of the extraordinary conclusions about the innate character of linguistic competence, but the apparent failure of any current notions about learning to account for the new linguistic observations in even a remotely satisfying way (p. 498).

In other words, one may be persuaded of the innateness of certain linguistic competencies without necessarily being committed to the biological hypothesis.

Localization of speech functions. Whitaker (1969) is committed to the biological hypothesis. He praises Lenneberg for demonstrating the relevance of biology for the study of language. However, he is critical of his conclusions concerning the localization of brain function in language. Lenneberg maintains that clinical evidence based on studies of lesions of the brain is suspect because of the great variety of lesion types which are difficult to locate and isolate. Whitaker (1970) believes that his own summary of research on the correlation between functions and brain loci makes a "plausible case" in support of the localization position. For example, Lenneberg argues that it is not possible to assign a specific neuroanatomic structure to language capacity. Whitaker agrees, but points to certain histological differences in the cortex of the speech areas. The anterior border of Brodmann's area 44 in man is unlike that of any other primate. Penfield and Roberts' (1959) and von Bonin's (1949) work also support Whitaker's position.

Cognition and language. Lenneberg argues that linguistic competence is part of a more general cognitive competence, but the nature of this relationship is not made clear, nor is the supporting evidence entirely persuasive. However, a review of other models reveals that the linguists are in no better position in this regard.

Learning. While Lenneberg must be credited with assigning a role to learning in his account of language development (as opposed to McNeill, for example), again the nature of the learning is not made explicit. Granted that language emerges "by an interaction of maturation and self-programmed learning" (p. 158), it becomes necessary to specify the principles by which the learning and the interaction proceed.

Resonance. It must also be admitted that the concept of resonance does not receive a satisfactory explanation in the discussion of language acquisition, nor is there a readily discernible method for verifying such a concept.

In summary, we may say that nativistic models, especially Lenneberg's, have made a profound impact on the study of language. It is as yet too early to assess the validity of these models on the basis of research evidence. In addition, Lenneberg's theory has generated controversy concerning the nature of linguistic universals, the localization of brain function, and the continuity of human and animal speech. All these issues remain open, suggesting the need for further research before a valid assessment of his model can be achieved.

Maslow's Hierarchy of Needs

Many different concepts have been invoked to explain human behavior--instincts (McDougall), drives (Freud, Hull), valences (Lewin), among others. One of the most useful has been the concept of need as developed by Henry Murray, David McClelland, and Abraham Maslow. All these authors have made substantial contributions to our understanding of personality dynamics through their elaboration of this concept, but for purposes of this review, we will focus on the theory of Maslow, since it has been widely quoted and influential in the field.

Maslow (1954) proposes a list of eight basic needs arranged by hierarchy of prepotency. The prepotent needs are more urgent and insistent than the others under conditions of equal deprivation. Until the prepotent needs are reasonably satisfied, the others do not emerge or function as motivators of behavior. These basic needs in order of propotency are: (1) physiological, (2) safety, (3) belongingness and love, (4) importance, respect, self-esteem, independence, (5) information, (6) understanding, (7) beauty, and (8) self-actualization. A person whose physiological needs remain chronically unsatisfied will, in most instances, be totally unconcerned with anything beyond satisfying them. When these are satisfied, then he can turn his attention to needs at the next higher level. While it is true that a few exceptional individuals may reach a state of high altruism and self-fulfilment through self-denial, in general it is true that the most direct way to cultivate a life at the higher levels is to ensure that the lower needs receive adequate gratification.

Physiological needs. These needs form the starting point for many learning and personality theories. They are unlike other needs in that most of them can be readily identified, are insistent, can be easily satisfied by engaging in a certain form of behavior, and are cyclical in their appearance. Some are associated with specific parts of the body, while others are more diffuse. Moreover, their recurrent nature is attributable to depletion and regeneration of bodily tissues, or occurs as a function of the release of hormones, etc.

Safety needs. These needs are more often gratified than not in our society. However, their potency is readily apparent under conditions of physical threat or deprivation, during war or riots or terrorist attacks, in the reaction to unemployment or death of a family member, or during earthquakes or other calamities of nature. Children, who are more vulnerable in this respect, and less able to provide for their own safety needs, may fly into a panic or be inconsolable in the absence of parents. Even adults who lead a relatively sheltered and safe life seem to prefer stability and cling to the familiar in a way that guarantees safety from invasion by the unknown.

Belongingness and love. When food and shelter are provided, the needs for belongingness and love appear. These needs involve not only receiving but giving love. People seek close relationships with other individuals or groups of their own age and persuasion. Many societal ills have been attributed to the inability to form such relationships, leading to alienation and anomie.

Esteem. Everyone needs to have self-esteem, to believe in his own worth and integrity. As George Herbert Mead pointed out,"self-esteem comes about through the internalization of the attitudes and opinions of significant others" that demonstrate their esteem. It is not surprising, therefore, to find self-esteem is related to a person's respect and esteem for others, and that improvement in the first often leads to an increase in the second. Self-esteem also comes through a feeling of being able to cope with the environment, a feeling that may be engendered by learning new ways of coping, or by moving into or constructing a less threatening or less complex environment.

Information. The needs described from this point on are less clinically differentiable in terms of the pathology that follows their frustration. This does not mean that their frustration does not involve pathology; it may mean only that it has not been recognized as such. It would appear that some forms of psychopathology, particularly of the value system, can result from the ungratified needs for knowledge and for understanding. There is almost no research directed to this point. These needs, too, can apparently be lost. There are persons who avoid the possibility of acquiring specific information. This can develop as a result of frequent early punishment or derogation for inquisitiveness.

From another point of view, such needs as this and succeeding ones must be postulated as basic in man in order to understand his history. How else than by the presence of instinctual needs of these sorts can we possibly explain the enormous differences between man and other animals? It was pointed out that the need for understanding may have some relation to safety needs, but all animals have safety needs and none of the others have sought information consistently. It is possible that chimpanzees have a rudimentary form of this need or of the need for understanding, or both, and that this helps explain some aspects of their behavior. (See, for example, Harlow.) Furthermore, we see this need and the need for understanding reflected in the behavior of the most primitive men known to us. One of the earliest and commonest occupational differentiations is that of the medicine man or priest, who can "explain" particular aspects of the environment. (He may also attempt to control them, but this is secondary and the techniques are based upon the explanation.) In addition anyone who has watched children grow up knows how the normal child accumulates and treasures items of information and seeks for understanding. "Why?" is probably one of the most frequestly uttered words in the 4-year old's vocabulary. How many children are so thwarted then that this need disappears? A number of school problems are probably to be understood as the frustration of this and succeeding needs.

Understanding. We need to have some understanding of the world around us and of ourselves, and with some persons this is an intense craving. Because this and other higher needs have been generally overlooked as basic motivators, we have practically no studies of them. It is, however, clear that gratification of them is important. Interpretation of the world in terms of some religious or philosophical scheme is a part of every known culture. It is not of equal importance to every individual in the culture; variations in this and the subsequent needs may be very

large. We have never evaluated the results for the individual who is forbidden areas of inquiry and understanding because of political or religious ideologies; hence, we do not know what kinds or degrees of pathology may result.

Beauty. Need for beauty is postulated on the basis of common experience rather than of clinical or laboratory research. As yet, it has not been demonstrated that its frustration can produce disease, pathology, or some other disturbance of the fullest possible development of the organism. Until that is done, it can only be included tentatively in a list of basic needs.

Self-actualization. There is sufficient clinical basis, not only in Maslow's own studies but also in many reports of therapy for assuming a need for self-actualization. All that a man can be he must be if he is to be happy. The more he is fitted to do, the more he must do. The specific form that this need will take must naturally vary with the capacities of the individual. It may or may not be expressed creatively, at least in terms of products which are detachable from the individual. It will probably always be expressed creatively in terms of life style. Effective self-actualization, however, can emerge freely only with prior satisfaction of the physiological, safety, love, and esteem needs, and some of the others. When it has emerged fully it seems to organize and to some extent to control these other needs.

Roe's Psychology of Occupations

What are the facts that determine occupational choice? Super's theory elaborates on the role of self-concept development and differentiation and the matching process that must take place between this development and the broadening of knowledge about various occupations that comes with adolescence. Anne Roe presents an alternative hypothesis that the individual's eventual choice is closely related to early experiences in the family setting that affect his attitudes, interests, and other personality factors.

By way of introduction to her theme, Roe discusses the nature of man as a social animal. Usually he lives as part of a family group that is loosely integrated into the larger society. While many forces are brought to bear in the formation of personality, it is in the critical early years, when the broad parameters of personality are being established, that the family is most influential.

There is no place on earth where life can be maintained without some work. In every society, even the most primitive, there is some division of labor. The primary division in most cases is along sex lines, and within this division of labor by sex, further differentiation is made on the basis of age. Secondary divisions, such as family membership, caste divisions, and minority status, also directly limit the number and kind of occupations open to a given individual. (Roe does not mention birth order and physical/mental ability among these secondary factors, but they would seem to be equally exclusive.) The rigidity with which these boundaries are perceived as constraining the individual will obviously be a powerful determinant of his eventual choice. These perceptions are acquired in the family setting and become an inherent part of the complex of attitudes and interests characterizing the individual.

But Roe's hypothesis is not confined to these determinants of vocational choice. In order to understand the role of the occupation in the life of the individual we must first have some understanding of his needs. Having dismissed the conept of economic man as inadequate, she searches for a theory of needs, and chooses Maslow's as the most relevant and adequate of the available theories.

> The application of this theory to occupational psychology is fairly obvious. In our society there is no single situation which is potentially so capable of giving some satisfaction at all levels (of Maslow's hierarchy) of basic needs as is the occupation . . . . the physiological needs . . . the safety needs . . . the need to be a member of a group and to give and receive love . . . . Perhaps satisfaction of the need for esteem from self and others is most easily seen as a big part of the occupation . . . We know too little about the remaining groups of needs to do much more than note their probable relation to occupations . . . (but) In almost any kind of work, it is more satisfying for the worker, and he will probably do a better job, if he knows what he is doing and why, and where his particular job fits into the

> total picture . . . . The need for beauty may be related to particular sensory or other capacities . . . and may also be reflected in many everyday activities of persons who are neither trained nor particularly interested in formal artistic activities . . . . (Finally) the need for self-actualization seems less likely to have specific concomitants in terms of particular occupations, but its strength may well be the key factor in differentiating those who put enormous yet easy and pleasant effort into their work from those who do not. This factor of happy effort and of the amount of personal involvement in the work is probably the most important single factor in success in the work. (Roe 1956, pp.31-34 italics added).

In relating vocational choice to early family experiences, Roe (1957) advances 8 hypotheses:

1. The hereditary basis for intelligence, special abilities, interests, attitudes, and other personality variables seem usually to be nonspecific. There may be a genetic basis for some "factors" of intelligence or aptitudes, but on this there is no clear evidence. Sex, as genetically determined, also involves some differentiation of abilities. It is, nevertheless, probable that in most instances genetic elements limit the degree of development rather than directly determine the type of expression.

2. The pattern of development of special abilities is primarily determined by the directions in which psychic energy comes to be expended involuntarily. The statement applies also to interests, attitudes, and other personality variables. Note the word involuntarily. It is intended to emphasize the fact that the things to which the individual gives automatic attention are keys to his total behavior. The point will not be expanded here, but the relevance of these hypotheses to the relations between personality and perception is clear.

3. These directions are determined in the first place by the patterning of early satisfactions and frustrations. This is the developing pattern of need primacies or relative strengths. In the earliest years these are essentially unconscious, and they probably always retain a large unconscious element. As noted before, we know nothing at all about genetic variability in basic needs, but it can be fairly assumed that it exists.

4. The eventual pattern of psychic energies, in terms of attention directedness, is the major determinant of the field or fields to which the person will apply himself. This is relevant not only to vocation, of course, but to the total life pattern of the individual. It determines what sort of special abilities and interests will be predominant.

5. The intensity of these (primarily) unconscious needs, as well as their organization, is the major determinant of the degree of motivation as expressed in accomplishment. This implies that all accomplishment is based on unconscious as well as on conscious needs, but it does not imply that these needs are necessarily neurotic. There is accomplishment which is a free expression of capacity, although this may be relatively rare. Accomplishment on this basis can generally be distinguished from accomplishment on other bases. The relevance of this hypothesis to eventual vocational performance is evident.

   It may not be so evident how the patterns and intensities of these basic needs are affected in the first place by the early experiences of the child. The following three hypotheses are are concerned with this problem.

6. Needs satisfied routinely as they appear do not develop into unconscious motivators. Intensity of the need is not a variable, since it is stated that the need is "satisfied." The fact that the satisfaction is gained routinely is important, and it implies the need to distinguish sharply between simple, direct, matter-of-fact need gratification and gratification with fuss and fanfare.

7. Needs for which even minimum satisfaction is rarely achieved will, if higher order, become in effect expunged, or will, if lower order, prevent the appearance of higher order needs, and will become dominant and restricting motivators. Lower order needs, of course, require some degree of satisfaction for the maintenance of life. The hypothesis would mean, e.g. that a child whose expressions of natural curiosity were thoroughly blocked, would cease to be curious. On the other hand, with less effective blocking, hypothesis 8 would apply.

8. Needs, the satisfaction of which is delayed but eventually accomplished, will become unconscious motivators, depending largely upon the degree of satisfaction felt. This will depend, among other things, upon the strength of the basic need in the given individual, the length of time elapsing between arousal and satisfaction, and the values ascribed to the satisfaction of this need in the immediate environment.

   The last hypothesis is the most significant for this review. It must be understood that the forms in which need satisfaction will be ultimately sought, in adult life, may not be obviously related to the basic needs referred to in the hypothesis. All of the well-known mechanisms of displacement, projection, etc. may function here. The problem of tolerance of deferred gratification is linked to such experiences as are implied in this hypothesis. (p.212-214)

Variations in the early experiences of children and, in particular, differences in parental handling of children are related to adult behavior patterns and, more specifically, to vocational choice. For purposes of

discussion, Roe outlines three major categories of parental behavior, each having two subdivisions. It is important to note, however, that the specific behaviors of the parents are of less importance than their attitudes toward the child. It should also be noted that this classification refers to the dominant pattern in the home. The relative effects of maternal and paternal attitudes are not considered, though it would be reasonable to assume that the mother's would be more salient, given the proportionately greater amount of time she spends with the child in those critical early years.

The three categories and subdivisions are:

A. Emotional Concentration on the Child

This ranges between the extreme of overprotection to that of overdemandingness. Perhaps a sort of mean between these two is the quite typical anxiety of parents over a first child, anxiety which, in the same parents, may be much alleviated for the second child, with resulting considerable differences in the personality pictures of the two children.

1. Overprotection. The parent babies the child, encourages its dependence and restricts exploratory behavior. There is often concentration upon physical characteristics and real or fancied "talents" of the child. The parents maintain primary emotional ties with the child.

Homes in which children are the center of attention provide pretty full satisfaction of physiological and safety needs, and attention to needs for love and esteem, but gratification is usually not entirely routine. The overprotecting home places great emphasis upon gratification, and generally upon immediacy of gratification, which keeps lower level need satisfaction in the foreground. Belongingness, love, and esteem are often made conditional upon dependence and conformity and genuine self-actualization may be discouraged. There is likely to be encouragement of any special or supposedly special capacities, however. The overdemanding parent may make satisfaction of needs for love and esteem conditional upon conformity and achievement, which is frequently oriented to status. Needs for information and understanding may be encouraged, but within prescribed areas, and the same is true for self-actualization needs.

2. Overdemanding. The parents make heavy demands upon the child in terms of perfection of performance and usually institute quite severe training. In later years they may push the child to high achievement in school and work. In somewhat milder forms we may have the sort of family status "noblesse oblige" pattern, in which development of skills is encouraged but the pattern of skills is a prescribed one. This is very typical of upper class families, with emphasis upon development of conceptual as opposed to motor skills. Severer forms may blend into rejection or may be cover for this.

B. Avoidance of the Child

Here, too, two extremes are suggested -- rejection and neglect. Care below the minimum adequate amount has well-documented effects, as studies of orphans have shown. Most other studies have few, if any, children in this group. Parents providing this sort of home do not cooperate in psychological studies. (The author does not suggest that non-cooperation is evidence of this type of care!) Minimal need gratification is provided.

1. Emotional rejection of the child, not necessarily accompanied by overt physical neglect. Lack of gratifications is intentional.

2. Neglect of the child. This may, in fact, be less harmful psychologically than emotional rejection accompanied by physical care. It shades into the next classification. Gratification lacks are generally not intentional.

By definition, this group has major lacks in need gratification. Rejecting parents may provide adequate gratification of physiological and safety needs, but refrain from love and esteem gratification, and frequently seem deliberately to withhold the latter or even to denigrate the child. Neglect of physiological and safety needs, but not beyond necessary minimal gratification is much more tolerable than personal depreciation and deliberate withholding of love. If there is no contrast with attitudes towards others in the immediate group there will be stultification of the child's development in some respects but not distortion of it.

C. Acceptance of the Child

Children in this group are full-fledged members of the family circle, neither concentrated upon, nor overlooked. Parents are noncoercive, nonrestrictive, and actively or by default, encourage independence. The minimum amount of social interaction is supplied at one extreme (this may be very low) and at the other extreme the group approaches the overprotection one. The major breakdown in this group is on the basis of the warmth or coldness of the family climate.

1. Casual acceptance of the child. Non-interference here is largely by default.

2. Loving acceptance. Noninterference and encouragement of the child's own resources and his independence may be intentional, even planned, or a natural reflection of parental attitudes towards others general

Accepting parents offer reasonable gratification of all needs. This is unlikely to be emphasized in the way in which the first group do it, although the extremes of the loving subgroup may tend in this direction Gratifications will not be deliberately delayed, but neither will dela be made disturbing. The major difference in the subgroups is probably in the way in which gratifications are supplied, and in the degree of deliberate encouragement and gratification of needs. (Roe, 1957, pp.214

Hence, Roe is positing that the earliest subdivision of direction of attention, and one which has significance for the whole life pattern of the individual, is that referring to persons. The basic orientation learned through interaction with the parents is toward or not toward people. Depending upon which of the above situations is experienced, basic attitudes, interests, and capacities will be developed that will find expression in the general pattern of the adult's life, in his activities, in his personal relations, in his emotional reactions, and in his vocational choice.

Persons from child-centered families who do not develop primary self-concentration will still be quite constantly aware of the opinions and attitudes of other persons towards themselves and of the need to maintain self-position in relation to others.

Persons brought up in rejecting homes may develop intense defensive awareness of others; if so they will probably have aggressive tendencies which may most readily find socially acceptable expression in occupational terms. On the other hand, they may strongly reject persons and turn defensively to nonpersons, or they may be unaware of other persons as different from objects in the environment, so far as their own relation to them goes.

Persons from accepting homes may have primary interests in persons or in nonpersons; it will not be defensive in either case, and it will not carry the sort of uncertainty that many in the first group show.

It is thus possible to relate these attitudes directly to occupational choice. The major occupational groups in Roe's classification of occupations is based on two dimensions: focus of activity and level at which the activity is pursued, as may be seen in the following table. The relationship is also depicted figuratively as seen below:

Roe's Classification of Occupations

Groups	Levels
I. Service	1. Professional and managerial 1.
II. Business Contract	2. Professional and managerial 2.
III. Organizations	3. Semiprofessional, small business
IV. Technology	4. Skilled
V. Outdoor	5. Semiskilled
VI. Science	6. Unskilled
VII. General Cutlural	
VIII. Arts and Entertainment	

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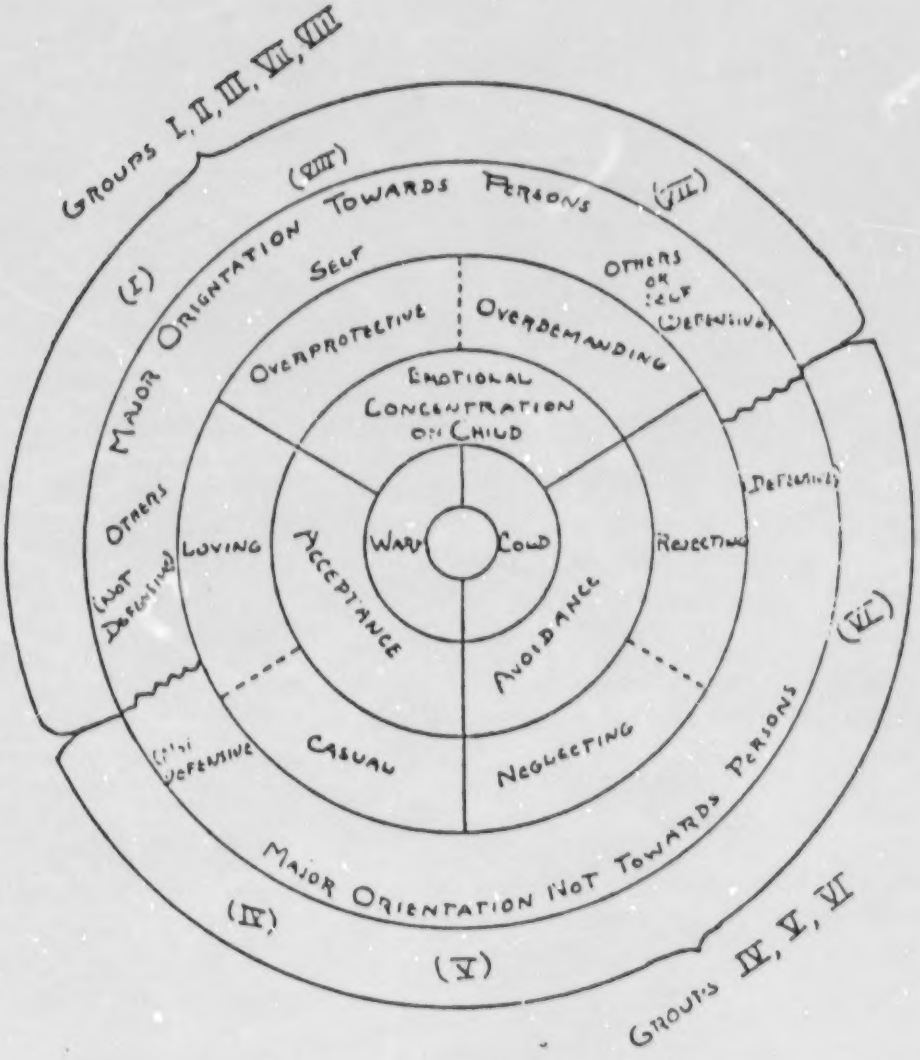
1. **Relationship between Early Experiences and Vocational Choir**



Vocational choice in deaf adolescents.

What are the implications of Roe's hypothesis for the deaf? First, her observations about the restrictions placed on vocational choice by the cultural assumptions pervading the home are especially significant in the context of the family with a deaf child. Over and above the usual restrictions that are placed on a child by the accepted values and aspirations of his racial and social class affiliations, are the limitations on his vocational sights that are placed on him as a function of his handicap. These restraints may not be articulated, but be a part of the mutually accepted system of family beliefs. There is, of course, the alternative possibility that the primary reaction of the parents to their child's disability is one of denial, in which case they may over-compensate by ignoring the handicap or pretending that it presents no impediment to the pursuit of any occupation, however unrealistic this stance may appear to be an outside observer. Roe has done vocational psychology a service in pointing out that it is not at adolescence that parental attitudes or advice carry most weight in decision-making, but at the prelingual level of infancy and in the early years before cognition is fully developed where the critical variables of attitude to oneself and, more broadly, to people in general, exert a profound influence on the occupational choice and eventual life style of the adult.

Roe's hypothesis is of interest in that we may speculate that, while other categories may apply to the deaf in the same way that they do to the hearing, the basic attitudes of the parents may in each case be more exaggerated in intensity and outcome than would normally be true. For example, we may surmise that a mother whose basic tendency is to be overprotective to her child may find greater opportunity and social sanction for her behavior if her child is deaf. Similarly, a mother or father who rejects the child might tend to be even more rejecting of a child with whom they were unable to communicate. Presumably, if Roe's theory is correct, these attitudes will have implications not only for the child's interpersonal relationships in home and school, but also for the type of work he chooses and his success in that work. Counselors and advisers should also consider information about the dynamics of the home, as well as capactities and interests, in making vocational recommendations.

Super's Career Development Theory

When counseling first appeared in schools early in the twentieth century, it was almost exclusively vocational in nature. Later the emphasis shifted to the personal aspects of counseling and counselors found themselves spending most of their time dealing with behavior problems, disciplinary cases, and personal and family problems. Case conferences with parents consisted primarily in discussing graduation requirements and, as more and more students set their sights on college, the characteristics of various colleges and college admission policies. Vocational counseling became almost incidental in many high schools, especially those that concentrated on the college-bound population.

One reason for this change may have been the rise in interest during the 40s and 50s in the self-concept. Super (1963) places the beginning of this trend to coincide with the appearance of Lecky's (1945) treatise and Allport's (1943) rediscovery of the ego in psychology. (Throughout the 20s and 30s behaviorism predominated.) Following the publication of these two works, the self became a focal point of interest for personality theorists, social psychologists, and counseling psychologists. Instruments for measuring the self-concept began to appear, giving rise to a large number of studies. By 1961 the body of research literature on the subject was sufficiently voluminous for Wylie to publish a book critically reviewing the theory, concepts, and studies that had appeared to date.

Meanwhile, investigators interested in the study of vocational choice had been pursuing their own lines of research, much of it stemming from the availability of the Strong Vocational Interest Blank. Carter (1940) constructed a theory of the development of vocational attitudes as a result of his interest in adolescence and his work with the Strong, and Bordin (1943) introduced notion of vocational interests as reflections of the self-concept and of occupational stereotypes, also as a result of work with the Strong. In 1951 Leona Tyler published a paper on the relationship of aptitudes and interests in young children, using self-concept theory to explain her results. With the collection of more data on the same children, Tyler (1955) started to build a theory of vocational development around the concept of identity.* Tyler and Tiedeman, as a part of the Scientific Careers Project, developed several working papers summarizing their thinking on the relationship of self-concept and identity development as reflected in vocational choice. It remained for Super and his colleagues to bring together the two theoretical strands relating to the self and to vocational choice.

The elements of self-concept theory of vocational development are identified by Super as follows:

> Self-concept formation. In infancy the individual begins the process of forming a concept of himself, developing a sense of identity as a person distinct from, but at the same time resembling other persons. This is essentially an exploratory process which goes on throughout the entire course of life until selfhood ceases. How does this concept of self evolve?

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* Erikson's theory of the adolescent identity crisis, which

Exploration appears to be the first phase and a continuing process. . . . Just as the infant plays with his toes, or holds his hands in front of his face to observe the movement of his fingers, so the adolescent tries his hand at writing poetry, or admires the skill revealed by the masterpiece which he has produced in shop. Similarly, the older worker who can no longer maintain the pace which he had set as a younger man tries himself out at new methods of work to which he may be better adapted in view of the physical and psychological changes which he senses in himself. The self is an object of exploration as it develops and changes; so, too, is the environment.

Self-differentiation is a second phase in the development of the self-concept. Moving his hand in front of his face, noting that it moves as he wills it to, whereas his mother's hand appears to move independently, the baby notes "This is I, that is someone else." He goes on to ask, "What am I like?" and thus begins the search for identity. The small boy, son of his father, is aware of the fact that he is smaller, weaker, a milk drinker but not a coffee drinker, and so forth. The adolescent, member of a teenage group, may be aware of the fact that he does not dress as flashily or talk as much as most of his friends. Similarly, the recent graduate working at his first regular job notes differences in his approach to clients as contrasted with that which characterizes his fellow salesclerks, and is conscious of greater interest in the paper work associated with the job than they seem to manifest.

Identification is another process which goes on more or less simultaneously with differentiation. The man-child, aware of similarities between himself and his father and differences between himself and his mother, aware and also envious of his father's strength and power, identifies with his father and strives in various ways to be like him. As Tyler has pointed out, the variety of male roles in our society, associated with the variety and prominence of occupations in men's lives, channels the boy's identifications importantly although not solely, along occupational lines. . . . This is less true of the girl-child, whose adult counterparts more often work at home or, if they go to work, tend to talk about it less and seem less involved in their occupations.

Role playing is a type of behavior which accompanies or follows identification. The small boy who identifies with his father seeks to emulate him. . . . Whether the role playing is largely imaginative or overtly participatory, it gives some opportunity to try the role on for size, to see how valid the concept of oneself . . . actually is.

> Reality testing stems as readily from role playing as role playing does from identification. Life offers many opportunities for reality testing, in the form of children's play . . . in school courses. . . in extracurricular activities . . . and in part-time temporary employment. . . These reality-testing experiences strengthen or modify self-concepts and confirm or contradict the way in which they have been tentatively translated into an occupational role.
>
> Translation of self-concepts into occupational terms. The translation proceeds in several ways, although it should be noted that much of the theorizing on the subject is done by analogy from other aspects of developmental psychology and from everyday observation rather than inferentially from carefully collected and analyzed data. (1) Identification with an adult sometimes seems to lead to a desire to play his occupational role; this global vocational self-concept, assumed as a whole, may be just as totally discarded when subjected to reality testing. (2) Experience in a role in which one is cast, perhaps more or less through chance, may lead to the discovery of a vocational translation of one's self-concepts which is as congenial as it is unexpected. (3) Awareness of the fact that one has attributes which are said to be important in a certain field of work may lead one to look into that occupation; and the investigation may lead to confirmation of the idea that the role expectations of that occupation are such they one would do well in it and enjoy it. Here the translation may be made bit by bit . . . .
>
> Implementation of the self-concepts. The implementation or actualizing of self-concepts is the result of these processes as professional training is completed . . . . (or the youth), after a number of rejections, finds the occupational translation of his self-concept as ne'er-do-well confirmed and implemented. After a series of negative experiences, it takes a great deal of re-education to help him develop more positive self-concepts, to find a suitable occupational translation of his favorable picture of himself, and to tu n it into a reality.

These appear to be the elements of a self-concept theory of vocation development. They are still not formulated as testable hypotheses, but judging by the research results so far, they do suggest and permit the formulation of hypotheses which tend to stand up when tested,and they can be helpful to counselors in dealing with the vocational decision-making of students (Super et al., 1963, pp.11-14).

Since these elements are sequential, it follows that whatever occurs in the earlier phases (elements) will have considerable effect on the outcome with respect to subsequent phases. Exploratory behavior would thus

appear to be extremely important, and it is for this reason that it has been investigated rather thoroughly by Super and his colleagues. In particular, adolescence is seen as a period in which young people explore the world in which they live, the subculture of which they are about to become a part, the roles they may be expected to play, and the opportunities to play roles which suit their personalities, interests, and aptitudes. It is at the same time a period in which the adolescent, through experience and self-examination, clarifies his self-concept and begins to put it into words, finds out what outlets exist in society for one who seeks to play a given role, and modifies his self-concept to bring it into line with reality. Adolescent exploration is, in this view, a process of attempting to develop and implement a realistic self-concept (p.51).

However, several important questions arise:

(1) What distinction, if any, is there between vocational exploratory behavior and other kinds of exploratory behavior?

(2) Who decides whether an act or a behavior constitutes exploration--the individual who is engaging in it, or a sophisticated and impartial observer?

(3) Is is possible for the individual to engage in exploration without his being aware of the fact? In other words, can exploration be engaged in unconsciously?

(4) Must an intent to explore be present before an act can be considered exploratory?

(5) Is the process involved in self-oriented exploration the same as that involved in environment-oriented exploration?

(6) Does an act which can be shown to have affected a person's behavior, that is to say, to have had exploratory value, automatically qualify as exploration?

(7) Should the term exploratory behavior be reserved for self-initiated behavior, or can it be used in connection with other-initiated behavior as well?

(8) C n exploration be a purely mental activity?

(9) Do s random trial-and-error qualify as exploration? (p.53)

As a result of raising these questions, and in an attempt to answer them, these researchers and model builders come to conceive of exploratory behavior as multidimensional in nature; a given behavior may be located on several continua:

1.	Intended	Fortuitous
2.	Systematic	Random
3.	Recognized or described by the subject as exploration	Not so recognized or described
4.	Self-oriented	Environment-oriented
5.	Self-initiated	Other-initiated

6.	Contemporaneous	Retrospective
7.	Motor	Mental
8.	Intrinsic	Extrinsic
9.	Behavior-modifying	Fruitless
10.	Vocationally relevant	Vocationally irrelevant

It is readily apparent that where an adolescent's behavior stands on these dimensions will have a profound effect on the occupational outcome. Exploration which is goal-directed and planful probably accounts for only a small proportion of all exploratory behavior. In fact, there is a good deal of evidence to the effect that a considerable number of young people entering the labor market for the first time engage in haphazard and unsystematic exploration. Their efforts to make a place for themselves in the world of work are, for the most part, disorganized and diffuse. This exploratory behavior may also be a camouflage for ways of securing group approval or demonstrating masculinity, but the youth may be only dimly aware of these undercurrents. Moreover, self-exploration and scrutiny poses a threat to the individual's self-concept (cf. Lecky) and hence mobilizes his defenses. On the other hand, exploration of the environment may lead to genuine self-exploration. (The converse is also true.). Exploration initiated by other people, in many cases, is the critical factor that confirms or modifies a decision (e.g. the teacher or librarian who intercedes at just the right moment to change a career), but there is a strong element of chance involved, and self-initiated exploration is likely to be much more timely and productive. Not all exploratory behavior is acted on immediately. The experience may be stored and used in retrospective appraisals at some future time. The significance of an event is not always readily apparent at the time of occurence, since the individual may not have the requisite structures to assimilate it (Piaget) or it may be too threatening at the time to his value system (Lecky). People tend to repeat behavior which proves rewarding (rather than threatening), but the rewards may be internal, in which case the person does not need extrinsic reinforcements such as money or praise. He may even be capable of deferring such gratification in anticipation of greater rewards at a later date. All these dimensions contribute to the outcomes of the exploratory behavior, and the feelings the young person has about these outcomes. Ways in which behavior may be modified as a result of exploratory behavior include:

(1) Increased self-knowledge

a. more realistic appraisal of one's interests, abilities, values, and personality traits

b. more realistic appraisal of strengths and shortcomings

c. increased understanding of reasons for behavior, feelings, and thoughts

d. greater awareness of resemblances and differences from others.

(2) Increased ability to relate this new knowledge to future objectives

(3) Increased and more specific knowledge of

a. occupational possibilities, their availability, character, requirements.

b. expectations of persons who occupy a significant place in one's life; parents, friends, peer group, teachers, employer, etc.

(4) c. adult mores and expectations

d. obstacles to be overcome to achieve one's objectives

e. preferred occupation

(4) Changes in self-perception

a. a more realistic self-concept

b. a clearer and better differentiated self-concept

c. a more integrated self-concept

d. an expanded self-concept

e. greater confidence in the self-concept

f. a clearer sense of identity

(5) Changes in interests, values, goals, concept of success

(6) Decision to continue with or abandon a course of study, preference, occupation, or course of action

(7) Changes in the way problems are handled or relationships with people

(8) Greater awareness of the ways in which people or occupations resemble or differ from one another

(9) Greater differentiation of interests and abilities

(10) Seeing signifi ance in something which previously had little, or a different, meaning

(11) Change to a voc tional or educational objective which is more in line with one's interests, abilities, values, personality, self-concept, and financial means

(12) Clear understanding of the bases on which certain decisions which are confronting one should be made

(13) Confirmation or rejection of a previously held belief about self, others, or some aspect of the environment

(14) Increased awareness of the choices and decisions which are, or shortly will be confronting one

(15) Formulation, implementation, or both, of plans for attaining one's objectives, or for self-development

(16) Formulation and implementation of plans for further exploration

(17) Clearer formulation of objectives

(18) Increased confidence in, or commitment to, one's objectives

(19) More realistic plans for achieving the goals set for oneself

(20) More specific plans for achieving one's objectives (pp.59-60)

Factors which facilitate, impede, or inhibit exploration

There are a number of factors which determine the extent to which an adolescent will engage in exploratory behavior, some of them within the individual (1-10), others in the environment and more or less outside his control (11-16).

1. Ability to tolerate tension, uncertainty, and ambiguity. Systematic exploration can occur only when the individual is able to endure lack of closure and the feelings of uncertainty which accompany it. The person who lacks this ability is likely to strive for premature closure and to act implusively.

2. Ability to tolerate frustration. As the phrase trial-and-error indicates, trial involves the possibility of failure and hence frustration. The individual who cannot tolerate failure and frustration is likely to stop exploring after one or two failures and to make do with the information and responses that he has; or he may become disorganized and less flexible, and regress to random trial and error.

3. Objectivity. It has been shown in a number of studies that the individual's needs, biases, motives, and customary frames of reference influence his perception of a situation. The data on selective perception and perceptual distortion are sufficiently well-known not to require any further discussion here. These same factors and processes can be presumed to operate in, and influence, exploratory behavior. If the individual is to construct a complete and accurate map of some aspect of his external environment, his perception of it, as Baldwin (1955) has pointed out, must be determined by the properties of the situation and not by his own needs, fears, wishes, and so forth. Objectivity implies broad, unselective cognition, openness to experience.

4. Ability to make judgments or inferences. It is seldom possible for the individual to acquaint himself with every possible aspect of a situation. There are, for example, parts of his environment to which he is likely to be denied access (for example, the operating theatre of a hospital). In such situations the individual has to rely on what he has read, heard, or seen in the movies or on TV. His ability to evaluate these sources of information and to make justified inferences from them about the less familiar, remote, not directly accessible parts of a situation, is therefore a matter of considerable importance.

   The need for problem-solving ability is obviously not limited to the situation described above. It enters to a greater or lesser extent into, and influences the outcome of, all but the simplest kinds of exploratory behavior. It includes the ability to interpret information once it is obtained, and the ability to decide which items of information and which aspects of a situation are relevant for goal selection or for goal-directed behavior.

5. Confidence and feelings of adequacy. Persons who feel adequate to meet most situations, who anticipate success rather than failure but are not demoralized by failure when it comes, who are not unduly afraid of the unfamiliar or the unknown and and who are self-accepting, are more likely to explore than those who lack confidence and who feel themselves to be inadequate. The relationship between emotional adjustment and duration, quality, and amount of exploration would appear to be worth investigating.

6. Independence. Children who are not hedged in by restrictions, who are allowed considerable freedom of movement by their parents and who are not only allowed but actually encouraged to seek and engage in new experiences are, as the studies of Baldwin (1955) and Levy (1943) have shown, more likely to show curiosity and to explore than children of over-protective, possessive, and dominating parents.

   Whether and how much a person will explore is not merely a matter of how much independence he is allowed; it is also a matter of how independent he *is*. The person who is submissive and conforming and who habitually bows to authority will, as Schachtel (1959) says, tend to accept the evaluations of others instead of exploring for himself. Reliance on authority, whether it be that of the parents, or the peer group, or some other agency, tends to limit exploration or to confine it to certain channels. As Ausubel (1954: 200) has put it, "Unfortunately . . . the development of the exploratory orientation is severely curtailed in the course of age-mate socialization. The adolescent's marginal status and his dependence on the peer society for status permits very little deviation from group values, and hence little opportunity for independent exploration."

7. Knowing when exploration has served its purpose. There are certain situations in which continued exploration is not likely to yield any further significant information. Knowing when this point has been reached is not merely a matter of insight or judgment; it can also be a matter of adjustment. There are some individuals who find it difficult to achieve closure: there is always one further bit of information which has to be obtained before a decision can be made. The obsessive-compulsive is a case in point. Persons who wish to achieve absolute certainty before they act, who are not willing to accept the fact that any decision involves some element of risk, tend to continue to explore long after they have reached the point of diminishing returns.

8. Identification with the peer group. While too great reliance on the standards, values, and expectations of the peer group can limit or channel the adolescent's exploratory behavior, identification with the peer group can also have beneficial results. It furnishes him with the backing he needs when faced with conflicting demands of the kind described earlier. Given the support of the peer group and parents who are reasonably permissive and encouraging, vacillation, inaction, and half-hearted exploration can be replaced by more adequate efforts at exploration.

9. Defensiveness. Another factor which may curtail or affect the outcome of exploratory behavior is defensiveness. As Maslow has noted in an unpublished paper entitled The Need to Know and the Fear of Knowing, individuals employ a variety of stratagems to guard against finding out those things about themselves or their environment which they would rather not know.

   Selective perception and perceptual distortion can also be employed as defenses; along with such long-recognized defense mechanisms as repression, withdrawal, and rationalization, they enable the individual either to avoid exploration or to restrict and distort his findings. Self-concept theory suggests that individuals guard against discoveries which cast doubt upon the self-picture.

10. Self-concept. People tend to engage in those activities which enable them to maintain, and even enhance, the pictures which they have of themselves. If this is so, then it can be expected that the person's self-concept will facilitate some kinds of role-playing and exploration and impede others.

* * *

11. Outcome of previous exploration. The individual whose exploratory efforts in the past have met with success or resulted in some gratification is more likely to explore new situations and new solutions to problems than one whose previous efforts have met failure, derision, or punishment. The latter will tend to play it safe, to rely on the opinions of others, and to be content with the solution or job which is closest to hand or most strongly recommended.

12. Conflicting societal demands. While our society expects the adolescent to develop and give some evidence of independence, the manner in which independence is to be achieved and the forms it may legitimately take have not been formalized in America as they have in some modern, and certainly in primitive, societies. The result is that the adolescent has no clear set of expectations to guide him. As Mussen and Conger (1956:491) have put it: ". . . the adolescent who must face the problems of transition from childish dependence to adult independence is likely to be impressed, not with the solidarity of the expectations of the adults in this regard, but with their divisiveness. In one instance, or with one set of people, he is likely to find out independence responses are rewarded. In other instances, or with other people, he may just as easily find that they are punished. The church, the school, the members of the various social classes, even the adolescent's own parents may have different notions as to the time when adult protection and guidance should be relinquished in favor of greater individual responsibility."

This inevitably leads to a great deal of conflict and ambivalence. When it is borne in mind that societal demands for independence compete with incompatible and well-established childhood dependence responses, it it not difficult to see why some adolescents are reluctant to explore. While uncertainty and conflict may, and often do, give rise to exploratory behavior (see our earlier discussion of Berlyne's theory)*, deeply rooted conflict and ambivalence of the type discussed above are likely to inhibit it

13. Psychological support and encouragement. When the parent or other adult whose approval and affection mean a great deal to him, encourage the individual in his efforts to play various roles or to extend his knowledge of the environment he is likely to be more venturesome than would be the case if this encouragement and support were lacking. Furthermore, certain

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* Not included in this report

roles are difficult to sustain unless one has the encouragement and approval of one's parents or some valued adult. Such support and encouragement also help to moderate the conflict described in the preceding section.

14. Availability of roles and opportunities to explore. There are several factors that can limit the individuals's opportunities to play certain roles and to explore. One of these is socio-economic status. As Hollingshead (1949) has shown, students from certain socioeconomic levels are not invited or do not feel free to participate in certain school and extracurricular activities. Socioeconomic status also influences the types of occupations the individual will become acquainted with through observation, heresay, and contact with other adults. They will tend to occupations located at the same level as the father's occupation.

Different social classes encourage different expectations, values, and aspirations. Thus the boy from a working class family may not only be disinclined to try out the role of scholar, but may find it difficult to sustain if he did. Working class families do not typically buy their children encyclopaedias and chemistry sets and send them to camp. The reason for this is not only financial, but also cultural; their values and expectations, and hence the interests and activities which they regard as appropriate for their children, are different.

Role-typing and child labor laws and trade union practices are two other factors which may limit opportunities for role-playing and exploration. The person who has been cast in a certain role, such as bookworm, clown, or rebel, may find it difficult to break out of the mold, and opportunities to try out other roles may be withheld from him. Child labor laws and trade union practices limit the kinds of work experience which it is possible for adolescents to get.

15. Maturity and the appearance of maturity. Adolescents who are perceived by adults as mature and responsible are likely to be given opportunities for role-playing and exploration which are denied their less mature peers. The maturity ascribed to them may be based on little more than size or the presence of certain secondary sex characteristics. Be that as it may, it has been shown that as adolescents grow older, job opportunities which were originally denied them because of their size and youthful-looking appearance now come their way more frequently.

16. Urgency. There are situations which, by their very nature, limit the amount of exploration that may be engaged in. Included in this category are situations in which there is an element of urgency, in which decisions must be made almost immediately, or within a specified interval of time.

The Deaf Adolescent: Putting It All Together

What do the models from the various categories, when considered as a group, tell us about the deaf adolescent? What information can be gleaned that might help us improve our understanding of his or her functioning?

At the outset a word of caution is appropriate. Deaf adolescents are individuals. At all costs we must avoid stereotyping these youth. It would be especially ironic at this time to develop a picture which came to be accepted as a delineation of "the" deaf person, just when the public at large is beginning to discard such stereotypes, and to show a greater sympathy and understanding toward deaf people.

However, psychology in general and developmental psychology in particular aim at achieving scientific status. This means that it deals in generalizations, in statements that can be made about groups, and the larger the group, i.e., the broader the generalization, the more satisfied the psychologist. Case studies of individual people or single units such as a family are of interest to the psychologist mainly to the extent that they confirm existing hypotheses or suggest new ones. Theories and models, by their very nature, are intended to refer to entire groups, or even to human nature in general. Therein lies their strength and their weakness. On the one hand, everyone, by virtue of being human, shares the same needs, drives, and characteristics to some extent; and by virtue of being a member of a given society, everyone shares to some extent the same socialization processes, or learning ways of satisfying those needs in a culturally acceptable manner. So we can hope to gain considerable insight from an examination of models of human development, because they are intended to apply to all human beings; there is, on the other hand, the consideration that variation among deaf individuals can be expected, just as it can in the population at large. At the same time, we might ask ourselves whether the range of variation on any given characteristic is as great among the deaf as it is among the hearing. This is an empirical question that must be determined separately for each variable.

To return, then, to the models, we might begin by considering some crucial questions, which may have implications for our entire discussion. These questions arise from the phenomenological models, of which, Lecky's was selected as the prototype. In essence, these models place the person, P, at the center of his psychological field. At birth the field is totally undifferentiated, because the infant is completely unaware of anything except his own sensations, which he does not separate into inside or outside his body. His first major task, which is both cognitive and affective, is to learn about the regularities in the environment, whether these be patterns of hunger followed by satiation, wetness followed by dryness, pain followed by relief, etc. Piaget maintains that these regularities are the basis for learning about object constancy, and hence the foundation for all later growth of concepts, principles, and higher thought processes. Erikson believes that these regularities provide the foundation for the establishment of patterns of basic trust, trust that one's needs will be taken care of,

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trust that one will survive in spite of one's vulnerability. Cognition and affect, at least at this stage, proceed hand in hand. These learnings represent, for the phenomenological psychologist, differentiation of the psychological field. Two questions immediately come to mind: Is the course of learning these fundamental patterns different or in some way deficient for the infant who is born deaf? Does learning follow the same course but proceed more slowly? To answer these questions, it would be necessary to examine the research that has been done on deaf babies and to compare their course of development with what we know about those not so handicapped. Research with infants has many built-in problems, and hence there has not been as much as we would like. Only in recent years, for example, have we come to revise, as the result of research findings, certain former beliefs that were universally held (e.g., the new-born baby's world of "booming, buzzing confusion" as described by William James).

Cruickshank (19) sees the phenomenological model as a useful one for understanding the dynamics of all handicapped children. Because certain avenues of experience are cut off from them, and especially if they are overprotected by their parents, the pheonomenological field of these children tends at any age to be relatively undifferentiated. In infancy this is particularly critical. Growth (or differentiation) proceeds apace; learning is geometrical. Subsequent learning is built on the foundation of learning in infancy.

If Cruickshank is right about the relative lack of differentiation, what does this mean in terms of the adolescent? In many ways, it may mean that he does not have the background of information to fully understand events and their implications. He is not worldly wise (or even street wise) because, in Piagetian terms, he does not have the structures to which he can relate new experiences. If his reading is poor (as is very often the case), he does not compensate for the lack of information-gathering expertise at the spoken level by gaining his knowledge from print. We must assume, therefore, that this lack of differentiation not only persists into adolescence, but is compounded year after year to the point that the deaf adult is probably functioning in the society at a much lower level than his basic abilities would predict. Lack of differentiation, it should be pointed out, will extend across the cognitive, linguistic, personality, social, and vocational spheres.

A critical question related to the prelingually deaf infant has to do with the degree of trust that is possible for him to establish in relation to his surroundings. Does the deprivation of one source of information, namely hearing, seriously affect the infant's ability to discern those regularities on which trust is based? On the other hand, does the fact that he must rely more heavily on people than would be the case with a hearing infant to anticipate and meet his needs make him even more trusting (to the point of overdependency) than is necessary to establish that crucial balance Erikson speaks of? This question is significant not only on its own terms, but because the attainment of this first developmental task sets the stage for subsequent personality development and future behavior.

It will be remembered that Erikson postulated a recurrence of the developmental crises at various periods of the life cycle. Presumably this question of when to trust, whom to trust, and how much to trust is a recurrent theme, one that must be perpetually reassessed by all individuals at different ages and in different contexts. Too much trust can lead people into situations that are not only inimical to their interests, but may even be dangerous. By contrast, a person who cannot trust enough may become fearful, avoid situations that could be beneficial to him, or even become a recluse. This problem is becoming recognized as fairly widespread among the elderly, who become so traumatized by media reports of muggings and other forms of violence that they dare not venture out of doors and become prisoners in their own homes. While it is important that all people in a society learn to take reasonable precautions to avoid potentially violent situations and to care for their own safety, these precautions need to be made on the basis of statistical probabilities. It may be that many people who feel vulnerable overreact and hence deprive themselves of beneficial experiences. This may be especially true of handicapped persons who are afraid of many physical and social situations which they could handle quite well if they felt comfortable enough to take the risk. It is well to remember, however, that such attitudes and behavior patterns are the outcome of the treatment the person received in infancy, and may not be amenable to easy or rapid change.

Trust is the basis of autonomy. If the person cannot trust others, he cannot learn to trust himself, to have confidence in his personhood, to feel that he is important in his own right. A sense of autonomy is probably the single most important component of a fully developed, mentally healthy personality, and certainly the basis for later achievement, even for motivation to achieve. It is the foundation for a sense of initiative, for the work ethic, for a sense of identity, all of which undergird the eventual life style.

The critical task of the adolescent period is to establish a viable identity, one that is possible in terms of the individual's capabilities and limitations, and one that can bring continued, long-term satisfaction. Adolescents, under the best of circumstances, have problems with this task partly because, as we have seen, it is an enormously complex undertaking in this society. If deaf adolescents are experiencing severe problems in coming to grips with the tasks of this period, we must seek the roots of the problem at previous levels of the life cycle. What is the precise nature of the difficulties they are experiencing? Are their problems substantially related to their interactions and communications with other people? If so, can the reason be found in attitudes of too much trust or overdependency, or is the converse true, that they are unwilling to expose themselves to rejection or ridicule, and in effect, lack even the minimal level of basic trust? What is the effect of these attitudes on their sense of self-worth and autonomy? Do they lack the initiative to make and implement plans on their own behalf? Does their vision of the future include taking care of and providing for themselves, perhaps even for others, and if so, how realistic is this vision?

It is becoming increasingly apparent, however, that the most critical period of all, in terms of its effects on future behavior, is the period encompassing the years of middle childhood, that stage that Erikson calls "industry vs. inferiority." This is the time in which the child learns not only the "tools" of the society, but more importantly, the work ethic, that pride and joy in work which can sustain him through periods of drudgery and tedium in pursuit of a long-range goal. If these attitudes are not established at this time, the child may well become a shirker, an "artful dodger," possibly even a permanent liability to the group or society at large. This may be the time when the welfare syndrome is born. What happens in school is, therefore, extremely influential in determining the child's attitude not only to subsequent schooling but to work and life in general. This places a special responsibility on the shoulders of elementary school teachers. Teachers of deaf children of this age should be particularly alert to signs of such attitudes among their charges, since passivity is often cited as prevalent among deaf persons, even those who have the capability to attend college. Real or fancied defects or weaknesses are likely to be cited as a rationale for such attitudes.

What of the cognitive and linguistic accomplishment and potential of the deaf adolescent? Academically we know that he lags behind his hearing counterpart. His reading level is likely to be fourth grade, or lower. Reading is such a highly complex skill that there are many possible reasons for this lag, and the problem must be sought in a constellation of factors rather than in a single cause. Each problem compounds the others. Further maintains that deaf youngsters are fully capable of developing concepts to the same extent as hearing students, though they may take longer to accomplish the same level of mastery. This may be true if a narrow definition of mastery is used. Experience suggests, however, that deaf students, even those who understand the denotative aspects of particular concepts are likely, through deprivation of experience, to lack the enriching connotations of words, aspects that permit more esoteric skills of detecting nuances, reading between the lines, and other higher level cognitive skills that make up reading comprehension.

Concepts are important not only to reading but to all subject matter areas. The lack of differentiation or connotative aspects of concepts affects the student's understanding of science and mathematics social studies and literature. The comprehension problem pervades every aspect of school life. A person who cannot read is not a fully functioning member of this society, and even fairly young children are quick to discern this fact. Almost invariably, among hearing as well as deaf children, a reading problem eventually becomes a social problem. The child's burgeoning self-concept and feelings of self worth suffer a severe setback. Depending on other factors in the home or school environment, the child may become withdrawn or timid, may even be emotionally disturbed, or may turn to antisocial forms of acting out or delinquency. Deaf students may be spared invidious comparisons by being kept in a group where all the members are at the same level of achievement, but this is only postponing the inevitable shock and self-revelation which must come when they are exposed to the world of the hearing and enter into competition for jobs and other benefits of society.

Linguistically we have seen that a deaf child may learn a language that has its own fully developed syntactic system, which he may learn just as completely as a hearing child learns the syntax of English. However, it is likely to be a different syntax, and this may pose problems of transition at a later date. On the other hand, it seems important that the deaf preschooler should learn to communicate as fully as possible in a language that is not only easier for him to master but which teaches him the concept of syntactic structure (inductively and nonexplicitly, in the same way that all children learn syntax). This accomplishment would seem to be preferrable to imperfect and partial learning of a more complex and difficult syntactic system that permits only vague and imprecise understanding of communicated information. In either case, unfortunately, it appears from the experimental evidence that deaf students do not have a very good understanding of English syntax, and that this does affect their reading ability adversely. As we have seen, even hearing children do not always have the degree of syntactic understanding we attribute to them, but the problem is even more severe in deaf children.

When syntactic understanding is imperfect, then understanding is imperfect. The words that carry the burden of meaning in a sentence are the nouns and verbs (concepts) and the syntactic structures embodied in conjunctions, adverbial phrases, etc. One has only to look at the difference in meaning between two sentences that are identical except for these structural items to realize their import:

I will not go unless he comes.
I will not go until he comes.

We have no measures of how much comprehension is being lost both in listening and reading as a result of deficiences in these understandings.

As noted in our discussion of Chomsky's theory, even if knowledge of syntax were perfect, a significant proportion of the meaning of a message is carried by semantics and pragmatics, which are inextricably linked to syntax in any case. Imperfect as a deaf child's knowledge of syntax may be, it is probably in the semantic aspects of language that he is most severely disadvantaged. His concepts are improverished, or so it appears. But meanings are also conveyed in the relationships of words, in their positioning, in the choice of a particular word in preference to a close synonym, in the degree of emphasis conveyed by particular modes of expression, distinctions which may be particularly difficult for the deaf child to understand.

In the pragmatics of language, the deaf person may have the advantage. Research in recent years has drawn attention to the proportion of information in a message that is conveyed through nonverbal means such as bodily posture and movement, facial gesture, and proxemic variables, e.g., distance maintained during interpersonal transactions. Being deprived of the aural aspects of communication, the deaf person may rely more heavily on these nonverbal concomitants. However, these aspects may convey a distorted message, even the opposite message to what is being stated; and in reading, they are totally absent, and hence cannot be used as an alternative source of meaning.

Lenneberg's theory must be considered at this point, because its ramifications for the deaf are quite clear (if somewhat depressing). If there is indeed a critical period for language learning, and that period comes to an end with early adolescence, that would suggest that there is little hope that the deaf child who has not acquired the primary language by then is capable of ever becoming a fluent user of the language. Of course, the primary language may be sign language, and the child may be fully conversant with this language, and that is a most desirable outcome. On the other hand, sign language, though picturesque and colorful in its terminology and expressions, does not contain the elaborate differentiations and richness of the English language. A person living in a culture where the primary language is English who is in possession of a sparser language must inevitably be at a disadvantage. The fact that he does not know or may not even care about what he is missing does not change the stark fact that he is missing a great deal.

On a more cheerful note, however, there is some recent evidence to suggest that Lenneberg may have been mistaken in his assumption of an upper age limit for learning a first language. A critical test case was "the girl in the attic" reported by Victoria Fromkin. At last report, the girl, who had been isolated from all human contact from a very early age, was making progress during her adolescent years in mastering the basics of English and was communicating effectively with her peers in high school. We should probably adopt a compromise position, neither accepting Lenneberg's hypothesis uncritically nor rejecting it out of hand. The truth may be that, while it is not impossible to learn a first language at the age of puberty, it is extraordinarily difficult, and the learner can never hope to achieve the same level as someone who learns the language in the normal way. Maturational hypotheses notwithstanding there is much to be said for early learning, provided it is not coerced or made into a traumatic experience for the child.

What is the emotional and social status of the deaf adolescent, according to the models we have examined? Much depends, of course, on the kind of childhood he has experienced, and the demands that are being made on him as a person moving toward the responsibilities of adulthood in our society. As Mead pointed out, much of the "sturm und drang" of adolescence is culturally imposed. We send mixed messages to our youth to the effect that they are neither children nor adults, too big to be treated as children even while they are engaging in childish behavior, and yet too young to be given the responsibilities and privileges of adults. For the deaf person, adolescence may be a smooth and uneventful transition from the dependency state of childhood to the continued dependency of adulthood. Or it may be particularly stormy for a number of reasons, such as severe discontinuity between the demands of childhood and adolescence, belated realization of the need for autonomy and self-determination, accumulated frustration with attempts to communicate his needs to people who have the power and means to affect his life, and a variety of other factors. A third possibility is that the student takes the transition period in stride, and is able to cope with the tasks and problems with as little trauma as many hearing adolescents. Research is needed to determine whether a significantly greater proportion of deaf youth experience adolescent problems than hearing youth.

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Developmental theory has provided us with one model of growth in the moral sphere, namely that of Kohlberg. His theory is closely tied to a Piagetian conception of cognitive development, and is therefore a stage theory. According o Kohlberg, most adolescents are at Stage 3 or 4, both of which fall in Level II--Conventional Role Conformity. The orientation is either "Good Boy" or "Authority and Social-Order Maintaining." The question now arises; if moral development is closely tied to cognitive development and dependent on it, does the well-recognized cognitive lag in deaf children entail a corollary delay in their moral growth? If so, we would expect to find many deaf adolescents at the Level I--Premoral level. This level incorporates Stages 1 and 2, the obedience and punishment orientation (egocentric deference to superior power or prestige) or the naively egocentric orientation, in which right action is that which satisfies the self's and others' occasional needs. Few or no studies have been conducted to test this hypothesis, so its validity currently rests on observation and other fragmentary evidence. Erikson has also remarked on the idealistic yearnings of adolescents. Because they have reached the period of formal operations and are now able to conceive of better worlds, they become impatient with the imperfect world of their immediate experience and scornful of adults who do not have the wit or will to change it. This frustration frequently leads to acts of rebellion, or even violence. Whether such a phenomenon is found equally among deaf adolescents is uncertain. There is some evidence that deaf adults are becoming more aware of and more assertive about their rights, but again, not much evidence as to whether this new awareness is shared by deaf youth.

Finally, on the occupational front, we know that adolescence is a period of searching for roles, examining one's self concept, and determining the values and interests that can best be satisfied in one or more types of career. This is part of Erikson's Search for Identity, and it implies a certain degree of self differentation, as well as the motivation to seek out information pertaining to specific vocations. Again, the deaf student may not have reached this stage by the time he is adolescent, a fact that could pose problems for those concerned with helping him define and implement a vocational choice. It should be noted that Erikson has remarked on the length of time it often takes an individual to settle on an occupational choice. He has called this period a "moratorium," because it seems as though the adolescent has entered a period of inability to make a decision, a period of relative inactivity, as far as progress toward a career and life style is concerned.

When an individual has experienced difficulty in negotiating earlier stages, it sometimes happens that this moratorium extends into the twenties or even thirties. Does this phenomenon occur more frequently among deaf persons? How many of them go from one job to another, without ever settling on a particular line of work, and to what extent is this due to external factors (unwillingness of employers to hire, lack of opportunities to develop skills, etc.) and to what extent a function of developmental lag, i.e., a late or extended moratorium?

We seem to have painted a very gloomy picture of the deaf adolescent, and we should hasten to add that it does not apply to all of them. It is possible to meet young deaf people who are alert, knowledgable, socially adept, and oriented toward a realistic vocation, and they provide us with an interesting test of the theories and hypotheses delineated here. We can only try to interpret the theories and to infer what they mean for the atypical adolescent. The picture is very complex. Where there is one kind of deficiency, this is likely to have implications for other types of deficiency. This is why we end up with such a negative picture. On the other hand, a study of those deaf students who seem to be adjusting to their handicap and coping with the demands and expectations of a frequently unsympathetic world present a challenge to these theories, as well as a potentially rewarding source of study.

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